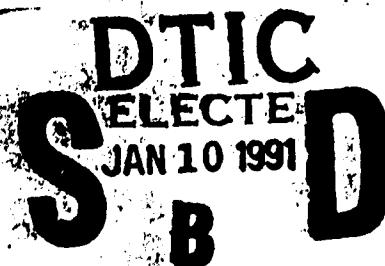


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AN EVALUATION OF THE TOP-LEVEL
AIR FORCE LONG-RANGE PLANNING MODEL
BASED ON A SET OF PLANNING FACTORS
TO DETERMINE THE
FEASIBILITY FOR IMPLEMENTATION

THESIS

Fredric J. Weishoff, Captain, USAF

AFIT/GSM/LSY/90S-34

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THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Systems Management

Fredric J. Weishoff, B.S.

Captain, USAF

September 1990

Approved for public release; distribution unlimited

Preface

The purpose of this study was to develop a set of planning factors that constitutes a successful long-range planning system. An in-depth literature review was accomplished to develop these planning factors. Specific long-range planning processes from industry and government were also used, as well as, four generic long-range planning process models, two of which dealt with defense planning. Once developed, these planning factors were used to evaluate the proposed top-level Air Force long-range planning model to determine the feasibility for implementation.

I have had a great deal of help from others in preparing and writing this thesis. I am deeply indebted to my faculty advisor, Lt Col Curt Cook, for his patience and flexibility when this very nebulous topic fluctuated from time to time throughout the research process. I want to thank Lt Col Ben Harvey and Mr. Joe Collins whose expertise, knowledge, and valuable insight in the planning arena were key contributors to this study. Thanks are also due to Capt Steven Heaps whose graphical and administrative support were greatly needed and appreciated. Finally, I want to thank my wife Lisa and two sons Adam and Andy whose love, support, and understanding were my real "light at the end of the tunnel."

Fredric J. Weishoff

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Abstract

The purpose of this study was to develop a set of planning factors that constitutes a successful long-range planning system. The proposed top-level Air Force planning model was then evaluated based on these planning factors to determine the feasibility for implementation.

Through an extensive, in-depth literature search and a review of specific planning process models, this study developed a set of planning factors. They were: full support and active participation of top-level management in the process; management issues top-down guidance; a feedback mechanism exists; the process identifies goals and objectives; it develops alternatives and strategies; it must be iterative, on-going, and flexible; all the players must be involved; and the process will increase communication and participation.

The evaluation of the proposed top-level Air Force planning model found that it met eight of the planning factors and partially met two of them. The model was deemed successful in theory and feasible for implementation, with the following caveats: establish a formal feedback mechanism, develop a closer link with the goal setting organizations and documents, formalize a training program, and document the process in an operating instruction.

AN EVALUATION OF THE TOP-LEVEL
AIR FORCE LONG-RANGE PLANNING MODEL
BASED ON A SET OF PLANNING FACTORS
TO DETERMINE THE
FEASIBILITY FOR IMPLEMENTATION

I. Introduction

Chapter Overview

The issue of planning in general, and long-range planning in particular, has been debated and studied for many years. Long-range planning is a very complex and dynamic discipline that shows the interrelationship between many organizational variables, and a process where there is no one best answer.

When examining long-range planning (10 to 20 years) and complex planning environments, there are no tools that will allow more than a gross estimate of what the future environment will be like. Thus, the concept of using a range of alternative futures, developed using a mix of methodologies and expert judgement, offers the most promise that plans will provide a hedge against an uncertainty in the future. (32:82)

The literature strongly suggests that organizations need long-range planning and a systematic approach to decision-making to be successful. This research explores that notion further, and attempts to show that long-range planning is vitally important to the United States Air Force (USAF). The author demonstrates that a set of planning factors exist that constitutes a successful long-range planning process. These factors are then used to evaluate the USAF top-level long-range planning process.

This chapter describes the general issue of long-range planning and the specific problem statement. Next, the investigative questions are listed which, when answered, provide a solution to the research problem. The objective and scope of the research are discussed, followed by the justification for long-range planning. Finally, the sequence of the research effort is presented.

General Issue

The literature shows that long-range planning is essential for organizational success.

A 1970 study by Thune and House on strategic planning in industry documented a positive relationship between formal strategic planning and successful performance. Organizations using formal strategic planning outperformed organizations using informal planning ... Within the more successful organizations, improved performance was correlated with the inception of formal strategic planning. (8:6)

Long-range planning can help an organization formulate its goals, aid in the decision-making process, more efficiently achieve its objectives, increase the effectiveness of resource allocation, increase productivity and flexibility, and decrease waste. Another well known study, conducted by Eastlack and McDonald

... studied the leadership characteristics of the chief executive officers (CEOs) of 211 companies, 105 of which were in the 1969 Fortune 500, and found that those CEOs who involved themselves in strategic planning headed the fastest growing companies ... [Furthermore,] the CEOs of high-growth companies felt formal strategic planning produced enough benefits in their firms to devote

a substantial proportion of one of their most limited resources--top management time--to it.
(17)

It is also well-documented that a lack of formal planning will lead to problems for the organization. "A 1985 survey of corporate program managers and senior management shows that insufficient and unrealistic planning are two of the top five causes of schedule slips and budget overruns" (31:5). It is viewed that in today's constantly changing environment and tightening budget, most organizations concentrate on short-term benefits and ignore the advantages of a viable, institutionalized long-range planning system. In essence, long-range planning is either not being done very well, or not at all.

Specific Problem Statement

This research study developed a set of planning factors that constitute a successful long-range planning system, and evaluated the top-level Air Force long-range planning model - the proposed model developed at HQ USAF/XOX - based on these factors. HQ USAF/XOX is the Directorate for Plans located at the Pentagon. Current methodologies may be recommended, if necessary, to suggest improvements in any deficient areas of this long-range planning model. Long-range planning is defined as a systematic framework to evaluate all major organizational decisions and assist the decision-making process under varying conditions of

uncertainty for a long-term planning horizon. That is, strategic planning will deal with the future impacts or consequences of present decisions.

Investigative Questions

This research effort will answer the following five investigative questions:

1. Is strategic planning essential for organizational success? If so, why?
2. What are the planning factors that constitute a successful long-range planning system?
3. What top-level long-range planning model is used in the Air Force?
4. How does the above planning model compare to the set of planning factors?
5. How can current methodologies be applied to improve deficiencies in the above planning model?

Objective of the Research

The objective of this research study was to develop a set of planning factors that constitutes a successful long-range planning system. This was accomplished by an in-depth literature review that examined the long-range planning processes from various industry and planning process models. The proposed long-range planning model being implemented at HQ USAF/XOX was then evaluated based on the set of planning factors to determine if the model will prove to be successful. Current methodologies may be

recommended to improve any deficient areas of the proposed planning model.

Scope of the Research

The scope of this study was limited to the top-level Air Force long-range planning model, as all lower-level models and sub-plans should be derived and be subordinate to the overall Air Force model. As such, this effort does not include a discussion of the specific planning processes of other services, governmental agencies or departments, although the benefits derived from these processes were used to help determine the planning factors. Also, four long-range planning process models, two of which deal directly with defense planning, were used in determining the set of planning factors. Due to the large volume of literature on strategic planning in industry and the government, any planning methodologies used were determined from the available literature. These were used to improve the proposed planning model, if necessary, based on the most current information available.

In a technical sense, long-range planning relationships consist of development planning, technology planning, system acquisition planning, corporate planning, and support resources planning (18:3). This study only addressed the first two areas, and the third to the extent that the relationship between development and technology planning,

and acquisition process planning was shown. Throughout the review of the literature, the term long-range planning was used in a number of instances synonymously with strategic planning. It is not the intent of this research to make a distinction between these two terms, although one may exist. Therefore, for the purposes of this study, both terms will be used interchangeably throughout the text.

The Justification for Long-range Planning

Is long-range planning really needed? In today's constantly changing environment, increasingly competitive market, and uncertain future, anything that helps to reduce uncertainty and aid the decision making process would be a valuable tool. This is not just a national issue, but a global one.

America faces a 21st century challenged by military and political competition with the Soviet Union, terrorism in the Third World, and economic competition with Asia and Europe. Our weaknesses are due as much as anything to our lack of strategic vision. We lack effective systems for systemic, long-range planning and an ability to think about long-range agendas for large institutions. (32:xvii)

Since there is a dynamic interaction between national and global affairs, "... we need to have clearer ways of developing vision, more effective techniques to generate a strategic plan, and a more powerful relationship between senior leaders and their planners" (32:xviii).

This need for long-range planning should permeate all levels of the Federal government, including DoD, and flow down to all subordinate levels. The top-level decision makers should, "... try to institutionalize the long-range planning process throughout those elements of our Federal Government that formulate and implement national security policy" (32:xv). This is sound advice that has been tried in the past, in fact, Lincoln Bloomfield

... credits Secretaries Cyrus Vance and Alexander Haig with attempting to improve long-range planning -- and with achieving little or no success. At the State Department, short-term issues repeatedly take priority over long-range planning ... [and] long-range planning will never succeed at the State Department because of the overriding pressure of current crises. (32:29)

The reason for this situation at both the State Department and the Federal Emergency Management Agency (FEMA) is that strong support and active participation by top leadership is lacking, therefore, long-range planning will not prosper (32:28). Long-range planning is absolutely essential with matters of national security and, "... its principles apply throughout government at the Federal, State, and local levels and in all generic planning areas, especially fiscal, organizational, political, technological, doctrinal, and resource areas" (32:xv).

The support and guidance for this national long-range planning process should come from the highest possible level. Major General (Ret.) Perry M. Smith, who has held

numerous planning positions including the Director of Plans, HQ USAF, and is an acknowledged expert in the long-range planning arena, accentuates the level to which long-range planning should be elevated:

The President should take two hours each month to address a long-range issue, and he should provide comments to his long-range planners in reaction to their ideas and recommendations. [It is hoped that] the Secretary of Defense, Secretary of State, our top military officers, the chiefs and secretaries of military services, the directors of the CIA and DIA, and the national security advisor to the President will also meet with their long-range planners on a monthly basis and provide feedback to them. Once every six months, the long-range planners from these agencies should meet to present papers, give briefings on their most recent studies, and trade ideas. Once a year, the top planners from each of the alliance nations should meet to share ideas and insights.
(32:5-6)

Carrying this concept one step further, Major General Smith states,

[It is hoped] that a long-range national security plan will be prepared and signed out by each new President ... which would create a strategic vision for the nation and a strategic challenge to the national security communities. This short, 8 to 10-page plan would establish goals and priorities, would be updated annually, and would be presented to the President each year for discussion, modification, and approval. The annual presentation could be held each July, timed to have the maximum impact on the planning of the departments, agencies, and military services involved in the development of national security plans, programs, and budgets. This approach would create the proper framework for decisionmaking.
(32:6)

Unfortunately, this framework has not been established at the highest levels of government and top officials "... often fail to encourage the establishment of a long-range

planning process that would allow them to deal with various long-range issues on a systematic and a regular basis" (32:6). A viable, institutionalized long-range planning process "... can keep us alert to new possibilities, new insights that will help us in decisionmaking, and new ways of meeting the future's challenges" (32:22).

Is long-range planning really being done? According to W. Edwards Deming, "In most instances, long-range planning is not done at all, and even where long-range plans exist, they are frequently neglected because of so-called emergencies" (34:93). Dr Deming further asserts that this long-range view, which he calls constancy of purpose, is the sole responsibility of top-level management, and neglect of long-range planning and implementation are key obstacles in attaining better quality improvement, and hence a more efficient organization (34:36). The Juran Institute noted that in order to be successful, businesses must institutionalize planning into their quality improvement efforts and organizational practices (4:25).

The Stanford Research Institute studied the question, "Why companies grow?" One major conclusion of the study was that, "In the cases of both high-growth and low-growth companies, those that now support planning programs have shown a superior growth rate in recent years" (14:62). Another view of the need for a long-range planning process states:

The perspective taken is that it's not our plans that are bad, necessarily, but the way we plan that could stand improving. Planning techniques and analytical formats are available in profusion - econometric models, computer simulations, and the rest. They could stand further technical refinements, surely, but bottom-line organization-wide performance rarely is affected significantly by so doing; most of the variance in performance is explained by the simple presence of a dedication to planning. Much smaller amounts of performance are explained by modifications in or improvements to the techniques. (16:42)

The long-range planning process of the USAF is even more important than that of industry. The USAF planning process dictates what technologies will be matured, what future systems will be developed, and the level of future force structure. These are critical decisions that may shift the delicate balance of world power and lead to or prevent nuclear war. "Because world conditions change constantly, continuous long-range planning must have a permanent voice in national security deliberations" (32:xiii). A Defense Planning and Resource Board (DPRB) discussion paper states

The Defense Management Review, the Packard Commission report, and the Goldwater-Nichols reorganization act have all stressed the need for more effective long-range investment planning to better link national security objectives and strategy with available resources. Integrated long-range planning is needed to facilitate effective decisions on long-term policies for national security ... and to support near-term programming and budgeting by providing clearer illustration of the long-range consequences--in particular, affordability--of near-term programmatic decisions. (12:2)

Therefore, the USAF must have a viable, institutionalized long-range planning process. Unfortunately, this is not the case. A framework for long-range planning has been established, but it has not been embraced at all levels. In fact, long-range planning is not done very well, if at all, in most agencies and departments of the Federal Government (32:xv). The recently published Defense Management Review (DMR) says it best:

Under the pressures of the annual budget cycle, consideration of broad policies and development of guidance on high-priority objectives all too often has been neglected, and decisions made instead on a short-term, issue-by-issue basis not well-suited to optimizing the use of available defense resources.
(5:5)

Sequence of Presentation

The overall research methodology for this study consists of five phases. The first phase is the introduction and contains the general issue, the specific problem statement, the investigative questions, the objective and scope of the research, the justification, and the sequence of presentation. The second phase is a literature review that answers the first two investigative questions. The third phase consists of the methodology. This phase describes the particular research method used to answer the five investigative questions. Data collection and initial data analysis was begun in this phase. The fourth phase consists of the findings. This phase

consolidated and summarized the results of the data collection and analysis, and answered the last three investigative questions. The fifth and final phase consists of the summary, conclusions, and recommendations.

The next phase of this research effort defines long-range planning. Then, four long-range planning process models, including two dealing with defense planning, are described. These form the basis for determining the set of planning factors that constitutes a successful planning system. Long-range planning in industry is then discussed, followed by planning in the Air Force, including some background information on Air Force planning history, the Vanguard process, and the top-level planning direction. This phase concludes with a section on long-range planning benefits. This study focused on determining the key factors that constitute a successful long-range planning system and how these factors can be used to evaluate the proposed top-level long-range planning model in the USAF.

II. Literature Review

Chapter Overview

This chapter provides an in-depth, extensive literature review for this research effort. The results of this chapter provide reasons for conducting long-range planning and develop a set of planning factors that constitutes a successful planning system, which answer the first two investigative questions. As such, this chapter starts with a definition of long-range planning followed by a description of four strategic planning process models. These models form the basis for the set of planning factors. Next, long-range planning in industry is presented followed by a discussion of long-range planning in the Air Force. This latter section includes Air Force planning history, development planning, the requirements process, and top-level direction. The chapter concludes with a discussion of long-range planning benefits.

Definition

Simply stated, long-range planning is a systematic method to define objectives, allocate resources, and evaluate major organizational decisions well in advance of implementation (23:25). A more comprehensive definition is:

Long-range planning, then, is a way of thinking about the future, thinking about what we want (that is, defining our objectives or interests), thinking about the conditions which are likely to

surround us in pursuing our objectives (projecting alternative environments), and thinking about ways to achieve our objectives either within the constraints of these environments or by influencing events to achieve a preferred environment (developing a strategy, a course of action). (32:93-94)

These alternative environments or alternative futures can be defined as, "... a description of a possible future state of events relevant to the planning object" (32:50). The possible future state of events, "... can mean events that are plausible, feasible, consistent with forecasts and projections, or, simply, reasonable to expect;" while the events relevant to the planning object, "... means that the planning object defines the relevant aspects of the future" (32:50-51). For the purposes of this research study, long-range is defined as, "... 10 years or more into the future. The most productive timeframe for serious consideration by long-range planners is the 10- to 25-year period" (32:3). Anything less than 10 years is too near-term or political to realize a significant change or revolutionary breakthrough, although the possibility is not ruled out, and anything beyond 25 years is too far out to realistically contemplate.

Long-Range Planning Process Models

Although there are numerous long-range planning process models, due to time and space constraints, only four are described below. The first two were chosen because of their general applicability to any planning environment, and

the latter two were chosen because they were the only two top-level process models that directly considered the unique aspects of defense planning. Also, these models are more than sufficient to develop a set of planning factors that constitutes a successful planning system.

The first generic long-range planning process model was developed by William P. Anthony as a teaching tool, and is shown in Figure 1. The model starts with an environmental analysis that provides a point-in-time assessment of the environment surrounding the organization. The next step is an environmental forecast which shows changes in the environment and future trends that can be expected. The customer/market analysis step develops a customer profile and analyzes current and future market conditions. The fourth step, strategic planning premises, lists all of the key assumptions, while the fifth step, internal assessment, shows the strengths and weaknesses of the organization. The next step, mission development, defines the organizational roles and missions, and determines how much resources can be expected for the planning period. The strategic thrusts step outlines the major areas of organizational focus and future direction. The final step, plan operationalizing, utilizes the six remaining steps to implement the strategic plan (1:4,6).

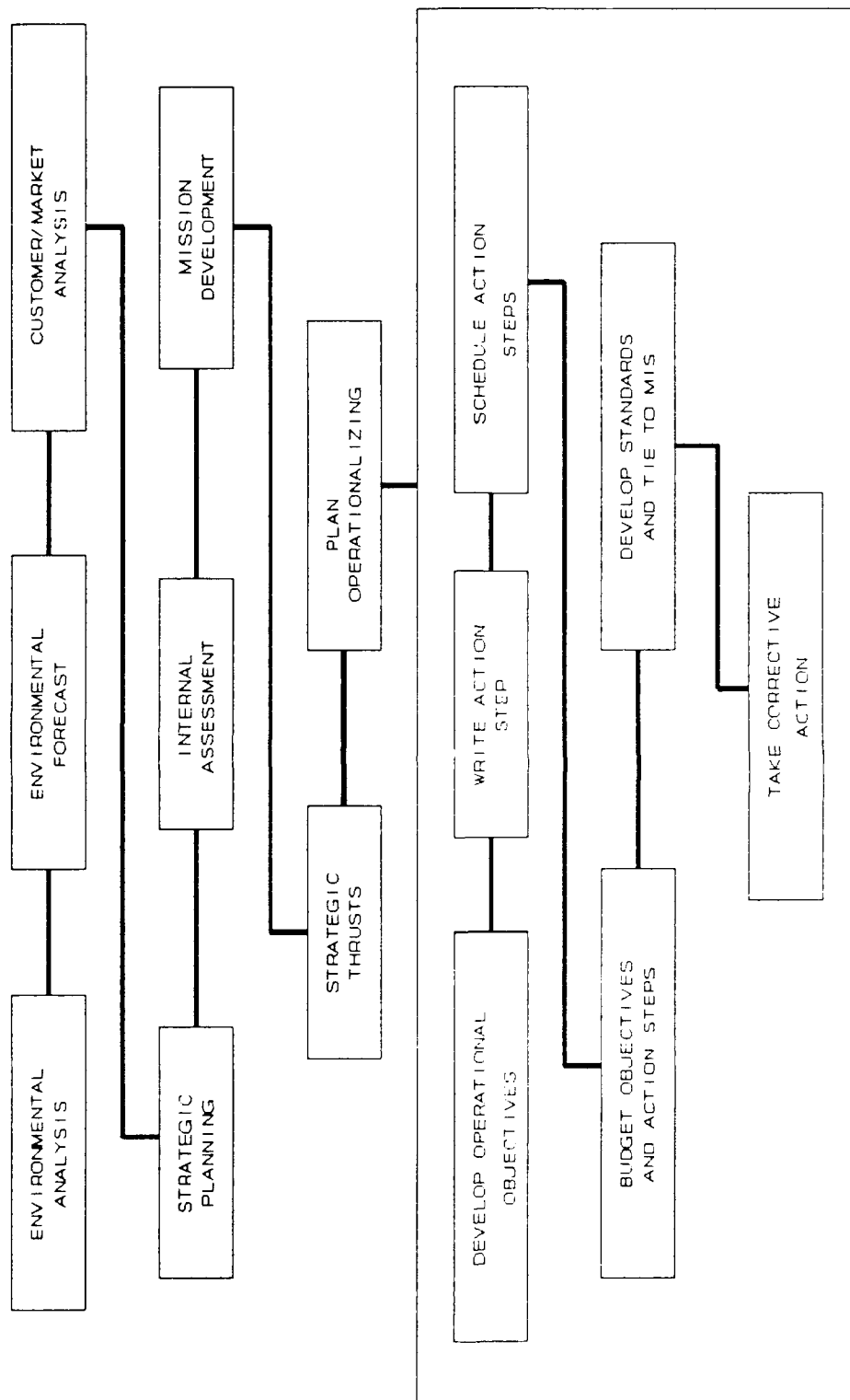


Figure 1 The Strategic Planning Process Model (195)

This model implies that there are five essential elements of any strategic planning process. These elements are:

- It recognizes the outside environment and explicitly incorporates elements of it into the planning process.
- It has a long-term time focus ... sometimes as many as 10 to 20 years.
- It is conducted at the top of the organization and at the top of the organization's major divisions or product groups.
- It involves making decisions that commit large amounts of organizational resources.
- It sets the direction for the organization by focusing on the organization's identity and its place in a changing environment. (1:4)

The second long-range planning process model was developed by George A. Steiner and is shown in Figure 2. According to Steiner, the three phases of strategic planning are the planning premise, plan formulation, and implementation and control. The planning premise phase can be further divided into environmental analysis, organizational analysis, data base, and evaluation. The plan formulation phase is composed of: define objectives, develop strategies, and develop comprehensive written plan. The implementation and control phase consists of implementation and control (8:7). This planning model is not unlike the previous planning model, in that, an initial external environmental assessment and internal organizational analysis must be performed. The plan implementation is much the same, and both models have a feedback mechanism. The feedback mechanism for Steiner's

model is addressed under the control area of the third phase. This model stresses that developing and documenting the strategies is the most fundamental step of the formal planning process (8:9). It further asserts that

the plan should solicit inputs from as many managers as possible and include as much relevant data as can be gathered. Although the model flows from top to bottom, in practice it is iterative. Additionally, the application of the model is a complex task. The organization introducing formal strategic planning should go through the process several times, and in increasing detail. Trying to incorporate all of the information in the first iteration will be frustrating and likely end in failure. (8:10)

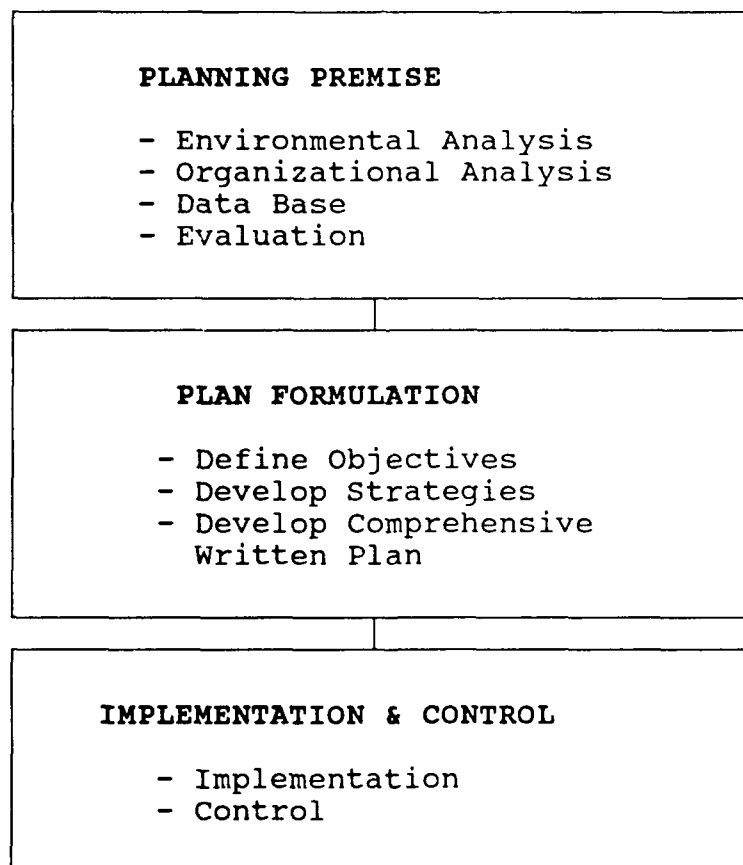


Figure 2: The Phases of Strategic Planning:
Steiner's Strategic Planning Model (8:7)

The third model, which deals directly with defense planning, was developed by Major General (Ret.) Perry M. Smith. Gen. Smith developed this model, or "laws" as he calls them, after numerous years expertise with OSD, a major NATO headquarters, research in long-range planning at Columbia University, Air University, and Air War College, and former Director of Plans for the Air Force (32:3,12). Gen. Smith's 15 "laws" that provide a model for developing and implementing a long-range planning process for the defense industry are set forth below:

- 1) Long-range planners must answer the "What's in it for me?" question.
- 2) Long-range planners must get and maintain the support of the top decisionmaker.
- 3) Long-range planners must have direct access to the top decisionmaker.
- 4) Briefings by the long-range planners to the top decisionmaker must not go through the normal coordination process.
- 5) The long-range planning process must lead to some decisions in the present.
- 6) The process must be institutionalized.
- 7) Within the framework of an institutionalized process, long-range planning must remain flexible.
- 8) In addition to the institutionalized process, periodic ad hoc studies are needed.
- 9) Long-range plans must be readable and short.
- 10) Planners must develop implementation strategies.
- 11) Planners must avoid constraining the innovation and divestiture process.
- 12) Planners must avoid single-factor causality.
- 13) Planners must avoid determinism - economic, political, technological, and others.
- 14) Planners must stay in close contact with the operational, doctrinal, policy, R&D, communications, logistics, and manpower communities.
- 15) Incentives must be provided if innovation is to be maximized. (32:14-21)

Most of these "laws" are self-explanatory, but some require further explanation. The first "law" implies that planners must convince others that long-range planning is not only good for the organization, but also for the individual planner (32:14). This is because "The participating long-range planners must be willing to challenge policy, procedures, systems, organizations, and doctrine as they would or would not apply to a world 10 or 25 years hence" (32:13). This line of work is not easy, so tangible benefits must be derived. The eleventh "law" basically means that one should not restrict the innovation and creativity of the planners by putting constraints on plans related to budget, technology, and time (32:19).

There should [also] be no sacred cows; planners should be willing to recommend the divestiture of organizations, major weapon systems, and major R&D programs, for example. (32:20)

Finally, the twelfth "law" means that long-range planners must look at many factors instead of a single one, because single-factor causality is usually erroneous and too simplistic (32:20).

Long-range planners must be broadly scoped people; they must take into account many factors in doing their planning ... They must try to convince the leader that, in fact, there are multiple factors that play roles in the development of future courses of action. (32:20)

These "laws" constitute a process that must be systematically integrated into the development of any long-

range planning model. They also can also be used as a check to see that the implemented planning system stays on track.

The fourth long-range planning process model was developed by Lieutenant General (Ret.) Glenn A. Kent, and is also directly related to defense planning. The objective of the model is to develop operational capabilities based on a strategies-to-task approach and is shown in Figure 3.

The approach centers on a simple but rigorous framework that links official statements of national security and national military strategy and the operational capabilities of force elements to programs for developing and procuring military systems and services. (24:iii)

The proposed framework requires five top-level national policy statements or documents, some of which already exist, or are mandated by the Defense Reorganization Act of 1986: The National Security Strategy of the United States, an annual report by the President; a report by the Chairman of the Joint Chiefs of Staff (CJCS) that proposes and assesses alternative national military strategies; Presidential guidance on national military strategy and fiscal constraints; guidance to DOD components by the Secretary of Defense (SECDEF); and an annual report to Congress by the SECDEF and the CJCS (24:3).

Considering Figure 3, this approach is designed to focus on the how the tasks and capabilities meet the regional and national strategies, rather than on a budget amount or specific force structure.

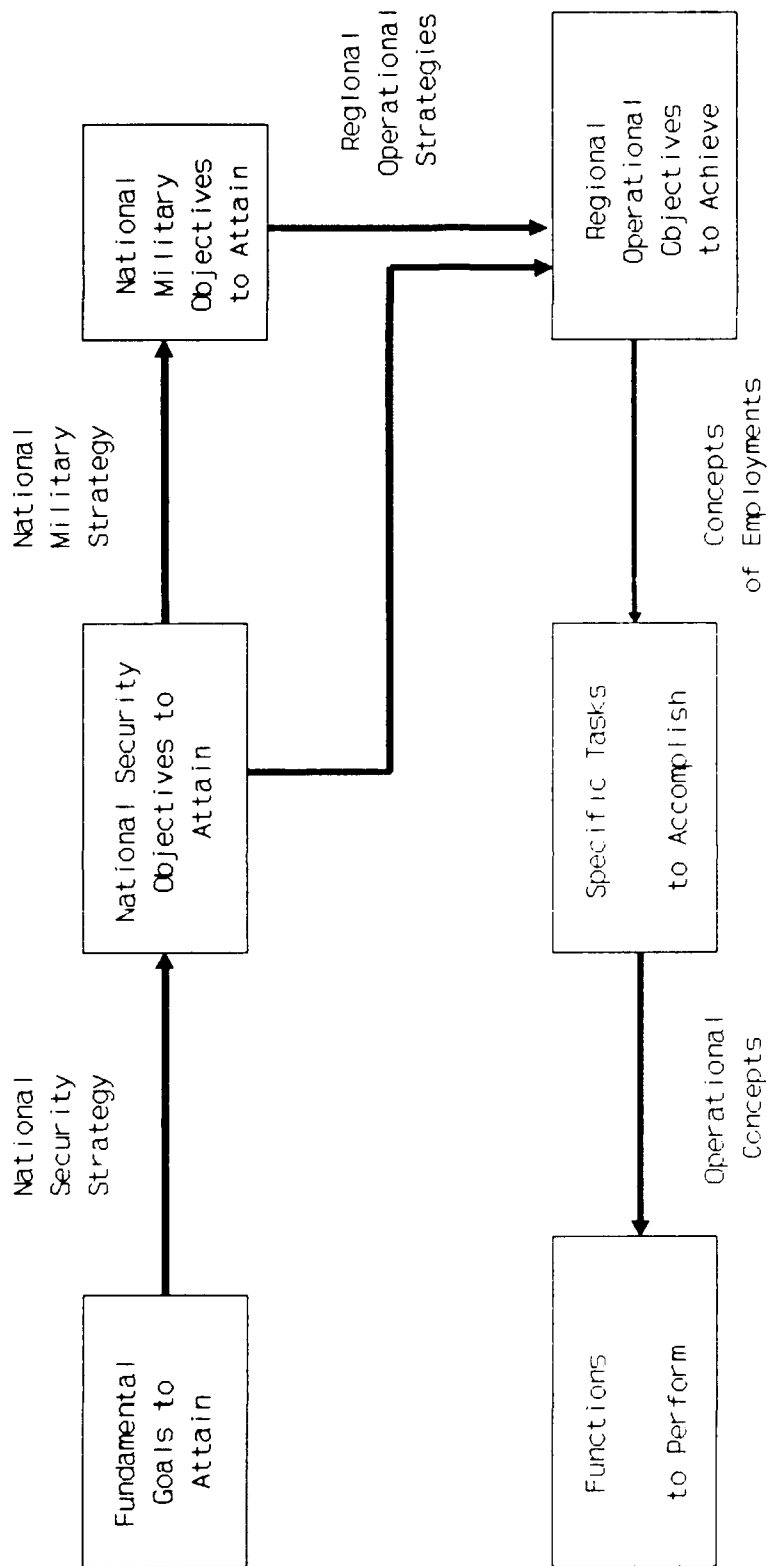


Figure 3: Kent's Overall Process Model (25)

In the proposed approach, we would examine the match between strategy and capability on the basis of whether the expected operational capabilities were adequate to achieve the operational objectives defined by the regional strategies. Too often, current approaches compare the overall budget levels of the United States and the Soviet Union or examine regional balances based on static measures of forces, such as numbers of tanks, aircraft, and ships. (24:47)

The key players in this model would be the SECDEF and the CJCS (see Figure 4) who would interact with the National Security Council (NSC) and the Office of Management and Budget (OMB) above, and the combatant commanders and the Services below to provide an integrated assessment of specific operational capabilities (24:12). This process can be used for both upgrading existing systems and introducing new basic systems.

This process will also identify problem areas, and in concert with the development and acquisition commands, operational concepts will be formulated and technology projects will be designated, leading to development and acquisition programs (24:21). This is shown in Figure 5. This long-term focus will promote program stability.

We cannot have efficient and appropriate allocation of resources without long-term continuity in programs and financing. Probably the most important step to reduce the waste of time and resources is to reduce the extreme fluctuations in the overall defense budget and the churning of individual programs within a given budget. (24:49)

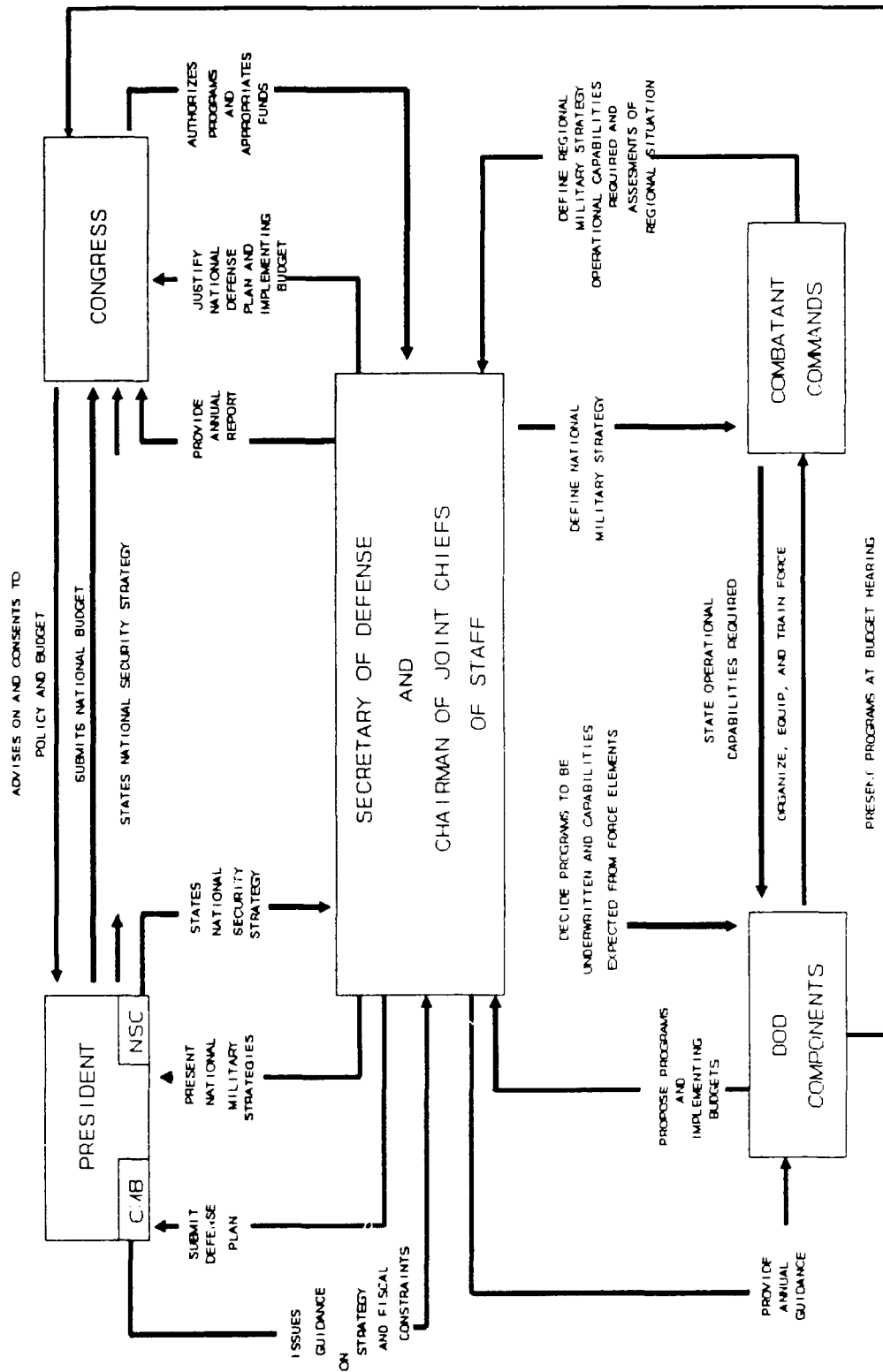


Figure 4: Kent Planning Process Principal Interactions (24)

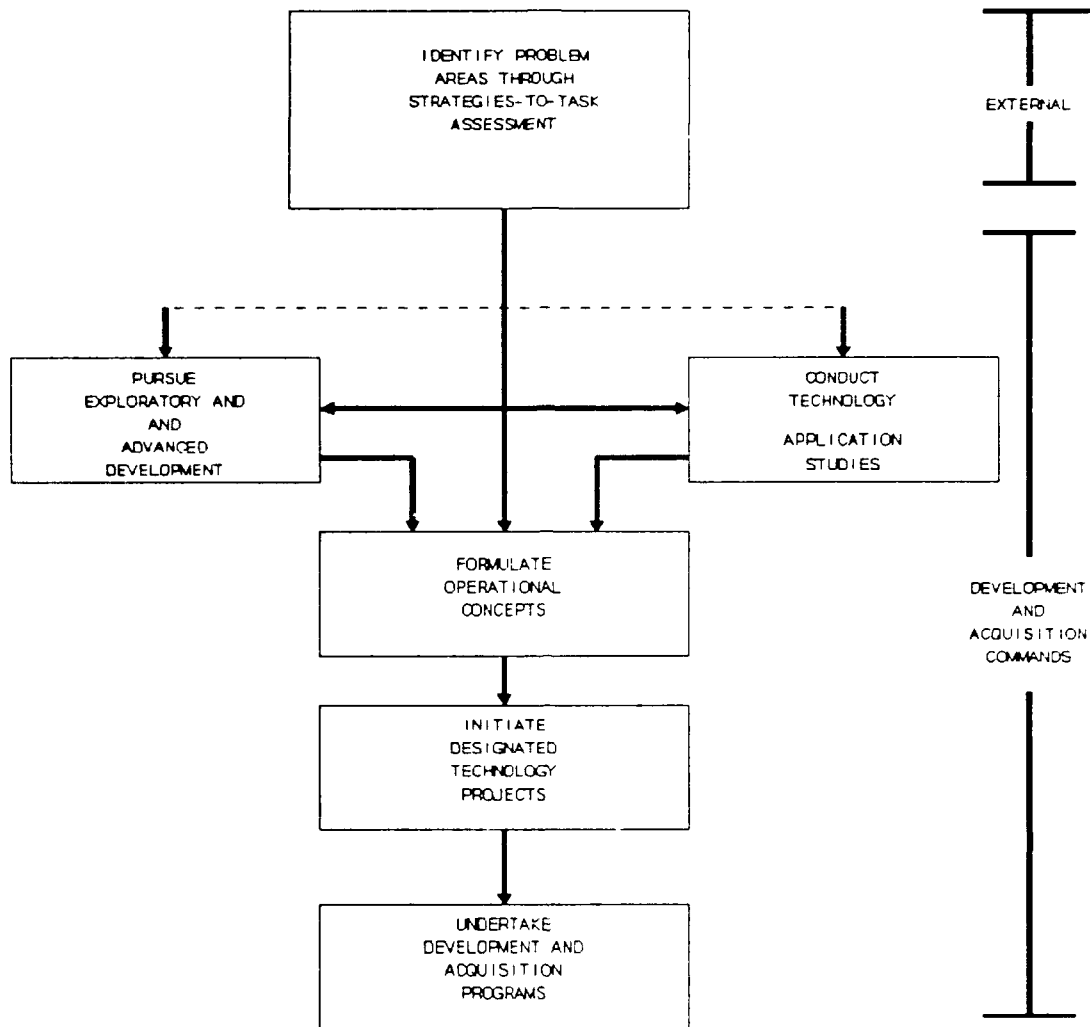


Figure 5: Summary of Activities Linking Strategies and Programs to the Acquisition Process (24)

Long-Range Planning in Industry

The primary purpose of a long-range planning process in industry is to maximize profits. Indeed, "Businesses survive only so long as they produce goods and services that generate revenues exceeding the costs incurred in producing them, that is, only so long as they produce a profit" (17).

One of the most important factors affecting how much profit an organization can expect, is its relationship with the external environment, or, more specifically, changes to this relationship. These changes typically affect the organization's effectiveness, as opposed to its efficiency and

... organizations depend much more for their long-run success and survival on improvements in their effectiveness (that is, on how well they relate to their environments) than on improvements in their efficiency. (17)

Olaf Helmer, a noted innovator in developing long-range futures states that,

The future is no longer viewed as unique, foreseeable, and inevitable; instead, it is realized that there are a multitude of possible futures, with associated probabilities that can be estimated and, to some extent, manipulated ... whether plans are made in the public or in the private sector, whether they are made in Norway or Romania or the United States, there is a growing awareness that sound planning must be based on as clear an accounting as possible of expected changes in the operating environment for which the plans are being formulated. (32:50)

Obviously, organizations need to focus on the changes in the external (operating) environment in order to survive and prosper. "The basic characteristics of the match an organization achieves with its environment is called its strategy," and developing this strategy is called strategy formulation (17). Recent studies have shown that a formal approach to strategy formulation, sometimes called strategic

planning, has resulted in higher organizational and financial performance (17).

With this in mind, the long-range planning process of industry is uniquely different from that of the Air Force. "Because business operates in an environment of uncertainty and change and requires the attainment of goals at the least possible costs, planning becomes a highly important function" (14:30). A typical long-range planning process for industry might be composed of seven phases:

- Phase 1 - establish parameters and missions
- Phase 2 - establish specific goals and objectives
- Phase 3 - formulate strategies and action plans
- Phase 4 - establish a time-phased schedule of the strategies and action plans
- Phase 5 - assign responsibility and authority
- Phase 6 - develop cost plans to test for financial soundness
- Phase 7 - establish a process to monitor progress (23:25-26)

One of the key elements of this planning process is the feedback mechanism that is established. This is vital if the long-range planning process is to remain flexible to adjust to changes in the environment, mission, objectives, action plans, etc.

A recent survey of 72 senior planning managers from various large corporations, mainly from the mining and electronics industries, produced some interesting results. The survey reported that 91% of the managers engaged in some form or aspect of long-range planning, whether formal or informal (28:19). The survey also showed that 95% of

top-level management is either directly or indirectly involved in the long-range planning process (28:19). In an effort to institutionalize the planning process, 71% of the organizations have formally constituted committees to establish and review long-range plans (28:19). It comes as no surprise that the three most important areas that long-range planning should consider are capital expenditure, sales forecasting, and cash requirements (28:20). The survey concluded that, "It seems clear that long-range planning has become an integral part of the decision processes of these corporations, and ... [has had] a positive impact on corporate performance" (28:22).

Another survey was conducted of investor-owned electric utilities to determine the impact of long-range planning on these organizations. The survey reported that almost 60% of the respondents have been involved in long-range planning for less than four years, and 81% have been involved for less than six years (30:47). The survey also showed that 50% of the long-range planners have been in their present positions for more than three years, and only 8% have held a long-range planning title longer than ten years (30:49). It is clear that the results of this survey differ from those of the previous one. Even though the nature of long-range planning is slow to come about in these electric utilities, the value of planning is still acknowledged by this statement, "... a positive relationship exists between those

utilities with corporate long-range planning and a higher rate of return on equity" (30:51).

Research and Development (R&D) organizations also use long-range planning to aid in decision-making. The very nature of the business requires R&D managers to use long-range planning techniques to determine the appropriate technologies to mature for full-scale development (FSD). The planning process of an R&D organization would be able to reduce uncertainty, assess environmental impacts, choose a feasible solution from among various alternatives, seek new growth, and continue to adjust the process through regular evaluation of performance (27:52-53).

One of the biggest and most successful R&D organizations in the world is the National Aeronautics and Space Administration (NASA). Even though NASA is a government organization, it is a model organization where long-range planning is concerned, and any R&D organization could benefit from their practices. NASA has had a successful long-range planning process for many years, which has put a man on the moon and numerous space probes to the other planets of the solar system and beyond. In fact, this planning process is designed to look as far as one hundred years into the future (32:30).

The reason for this success is that the process is based on five major features:

- a. The Administrator and his senior managers participate actively in the planning process, thus increasing the relevance and acceptance of the plans.
- b. A major product of the planning process is a list of long-term goals published to guide the organization's efforts.
- c. The process of planning is considered to be at least as important as the plan and its achievement. Even if a plan is found to be not very useful when the future arrives, the thinking that went into the planning will have paid dividends over the years and will be useful for replanning.
- d. Management believes that the long-range planning process significantly improves internal communications.
- e. The process is decentralized. Planning is accomplished primarily at subordinate levels, not at NASA headquarters. (32:30-31)

Long-Range Planning in the Air Force

In contrast with industry, the USAF has no profit motivation, so the long-range planning process, as expected, is different. In some circles this is given as a prime reason that long-range planning is not done very well in the military. This does not mean, however, that the Air Force is not concerned with monetary matters. In fact, with the current tightening of the defense budget, constant congressional scrutiny, and increased public awareness, funding has become a major parameter in the acquisition of a weapon system.

Members of Congress are increasingly concerned that military strategies and military budgets are not clearly linked and, in fact, may not be

linked at all. Members of Congress are also concerned that programs to acquire systems and equipment are proliferating and that these programs too often are advocated on an individual basis, without systematic consideration of alternatives and without adequate elaboration of their role in supporting our military strategies. (24:1)

In light of this, efficient resource allocation and an improved decision-making capability are of vital concern. In an article about determining the centers of gravity for strategic targeting purposes, the authors assert that there is an overwhelming need for efficiency in the application of force, and a sound long-range planning process is one way this can be accomplished (26:23).

Background. The arm of the USAF that develops and acquires these weapon systems is Air Force Systems Command (AFSC). The mission of AFSC is to develop, acquire, test, and deliver superior weapons systems to "... provide quality products and services at an affordable cost, in a timely manner, to overcome critical deficiencies in satisfying the user's operational objectives" (9:1). This mission is accomplished through a five-phased acquisition process that links requirements, technology, and development planning; concept direction studies; design, procurement, manufacturing, and production activities; and operations and support activities over a 10- to 20-year timeframe. The acquisition milestones and phases are depicted in Figure 6. This lengthy timeframe is required to mature the

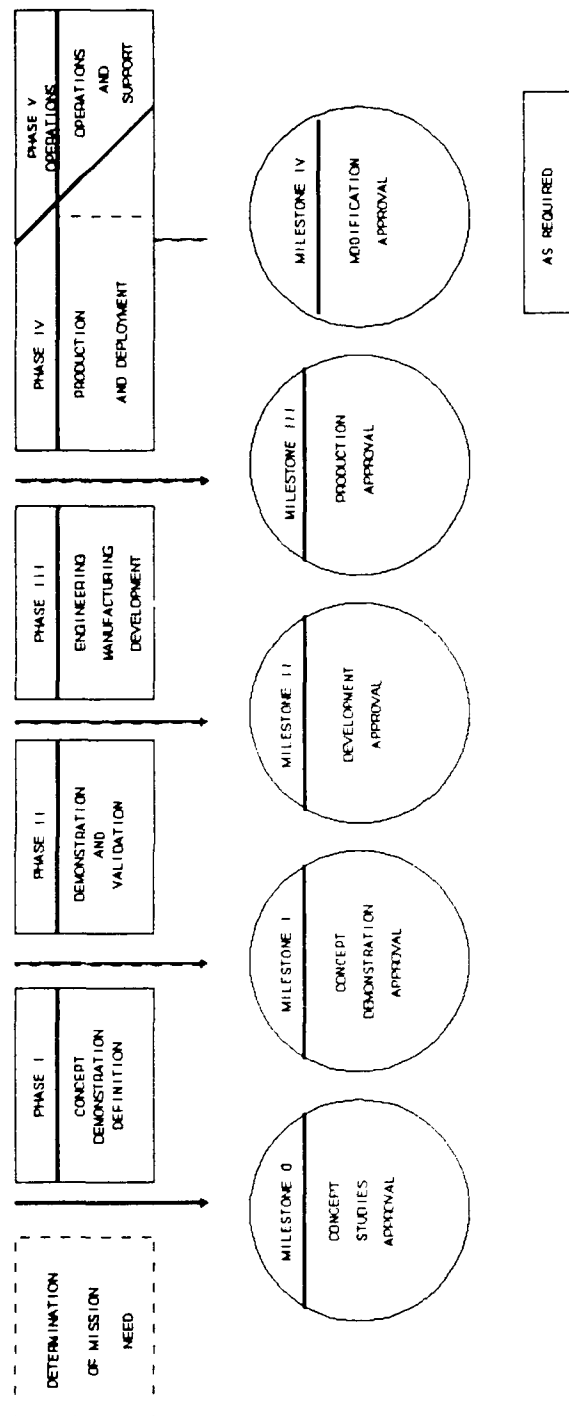


Figure 6: Acquisition Milestones and Phases (11)

technologies that are needed to develop future weapon systems concepts to provide a military warfighting capability.

Needless to say, this is an enormous and complex task, and one which is vitally important to the national security. As with most large organizations, especially those in the government, size and complexity are obstacles to a long-range planning process.

By its nature, planning is inherent in almost all management processes and because of this fact has no easily definable boundaries, no single right beginning, most certainly no end, and cannot be neatly gathered up into a position description for delegation to an individual or group. (6:19)

But it is this very issue that makes it extremely important to have a systematic process that integrates the needs, objectives, resources, and action plans of all the offices involved (31:2). "An organization whose environment is dominated by instability, complexity, and uncertainty is well suited for strategic planning" (31:12). The Air Force is such an organization, and this should be reason enough to implement, service wide, an institutionalized long-range planning system to aid the integrated decision-making and resource allocation processes.

Air Force Planning History. After World War II, long-range planning in the Air Force was done largely by ad hoc committees. Two "technology push" studies, Toward New Horizons and Project Forecast, were conducted in 1944 and

1964, respectively. These studies pulled together a team of experts from the government, industry, and academia to brainstorm feasible technologies that could be used to develop future weapon system concepts. These studies accomplished their goals, but "... were not linked to the formal planning process, and they did not establish a permanent organization of experienced long-range planners" (32:33).

In the 1960's, then Secretary of Defense Robert McNamara laid the groundwork for the annual Planning, Programming, and Budgeting System (PPBS). Major force structure decisions and resource allocations have taken place through the PPBS process which was documented in the Five Year Defense Program (FYDP). Although the PPBS is an excellent financial planning tool, it cannot be considered a long-range planning process because of its relatively short time horizon of five years. Furthermore, it doesn't take other planning aspects into consideration, i.e. environmental, political, technological, organizational size and structure, etc. In 1973, the Air Force Contract Management Division (AFCMD) "... initiated a model strategic planning process that attempted to provide a long-range assessment of internal and external environments" (31:10). This process met with limited internal success and was not widely recognized or accepted.

Not until the late 1970's did the USAF attempt to set up a corporate long-range planning process. In 1977, then Secretary of the Air Force John Stetson formed a study group to address the issue of institutionalizing a long-range planning process in the USAF. This study group was chartered to:

- a. Survey corporate long-range planning techniques and determine the feasibility of their adoption by the Air Force.
- b. Develop a process for institutionalizing long-range planning.
- c. Examine the world 20 years into the future, detailing threats and opportunities for the Air Force and the nation. (32:31)

As a result of this study, the USAF Long-Range Planning Division was created at HQ USAF.

The Long-Range Planning Division members, along with the Director of Plans (a major general), meet privately with the Secretary [of the Air Force] and [the Air Force] Chief of Staff each month and address a specific long-range planning issue ... After a 20- to 30-minute briefing, a number of "candidate strategies" are suggested. The Chief and the Secretary are asked to pick the strategy with which they are most comfortable. The long-range planners take this guidance and enter the suggestions ... into the regular planning process. (32:10)

From this the USAF planning process was developed as shown in Figure 7. This process shows how the Air Force, DoD, and JCS planning documents and products are related to each other. The first products from this initial planning process were the USAF Global Assessment (GA) and the Planning Guidance Memorandum (PGM), the latter of which was signed by the Secretary of the Air Force and the Chief of

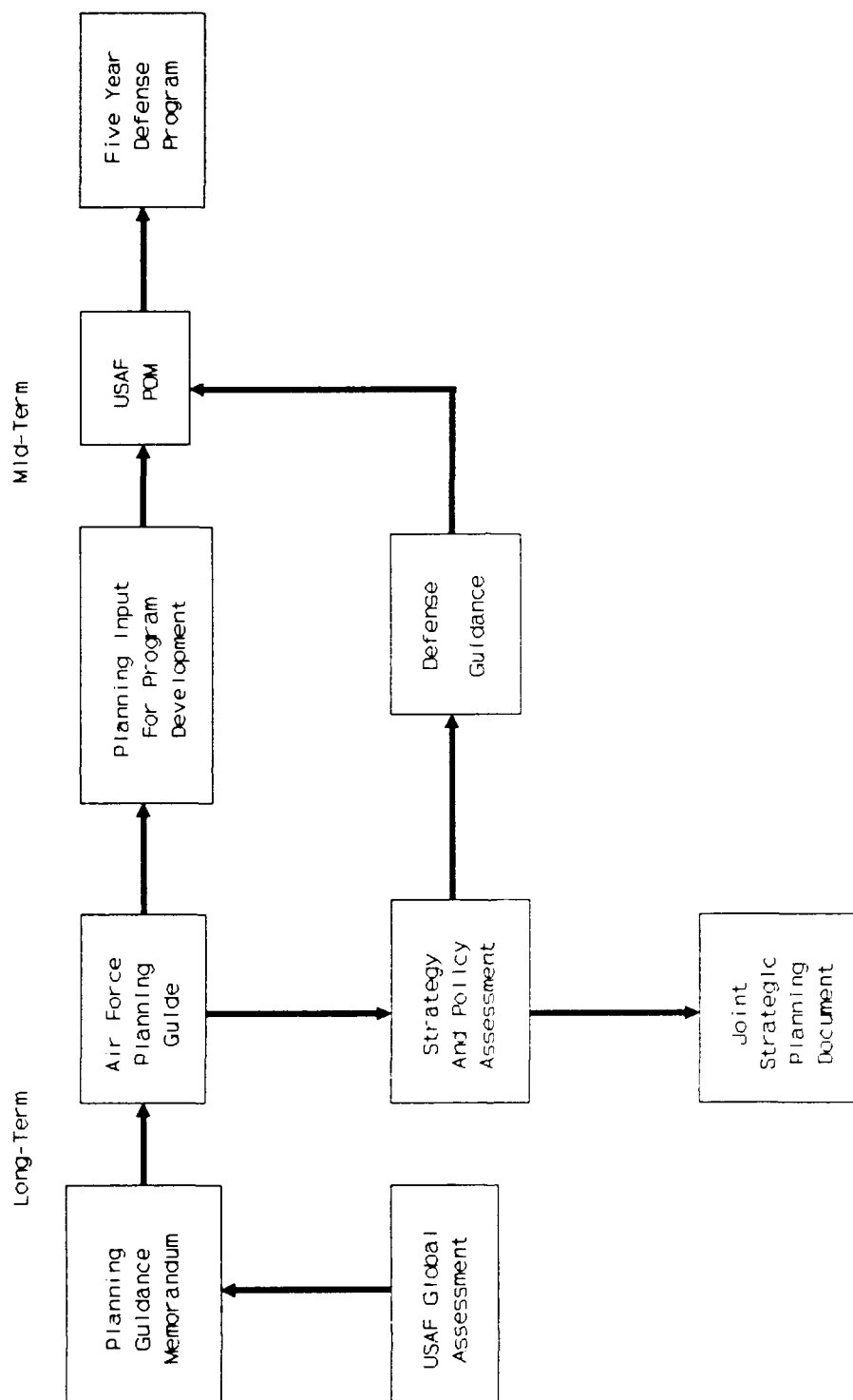


Figure 7: The USAF Planning Process (32:39)

Staff of the Air Force. Although other planning documents are also now produced by this division, the GA and PGM are still the cornerstones of the USAF long-range planning process.

Development Planning. Since the late 1970's, the Air Force integrated, long-range planning and analysis process has been development planning, which is shown in Figure 8. This planning process is composed of two secondary processes: the Vanguard planning process and technology planning, which will be discussed at length below. Development planning, which is conducted by AFSC, develops tentative needs, weapon system concepts, and technological concepts and initiatives through milestone 0, and concept direction studies between milestones 0 and 1. Under the DMR revised acquisition process, milestone 0 is where a proposed program gets funding for concept direction studies, and milestone 1 is where the program, if approved, gets program specific funding for a new start. In addition, it provides technology guidance and directs the transition of mature technologies before FSD. The purpose of development planning, as related to the AFSC mission, is to

- (1) Advance technology for future Air Force missions.
- (2) Prevent technological surprise.
- (3) Develop and acquire militarily superior and supported Air Force weapon systems. (18:1)

This development planning process also supports innovation (revolutionary improvements), analysis (what-if scenarios),

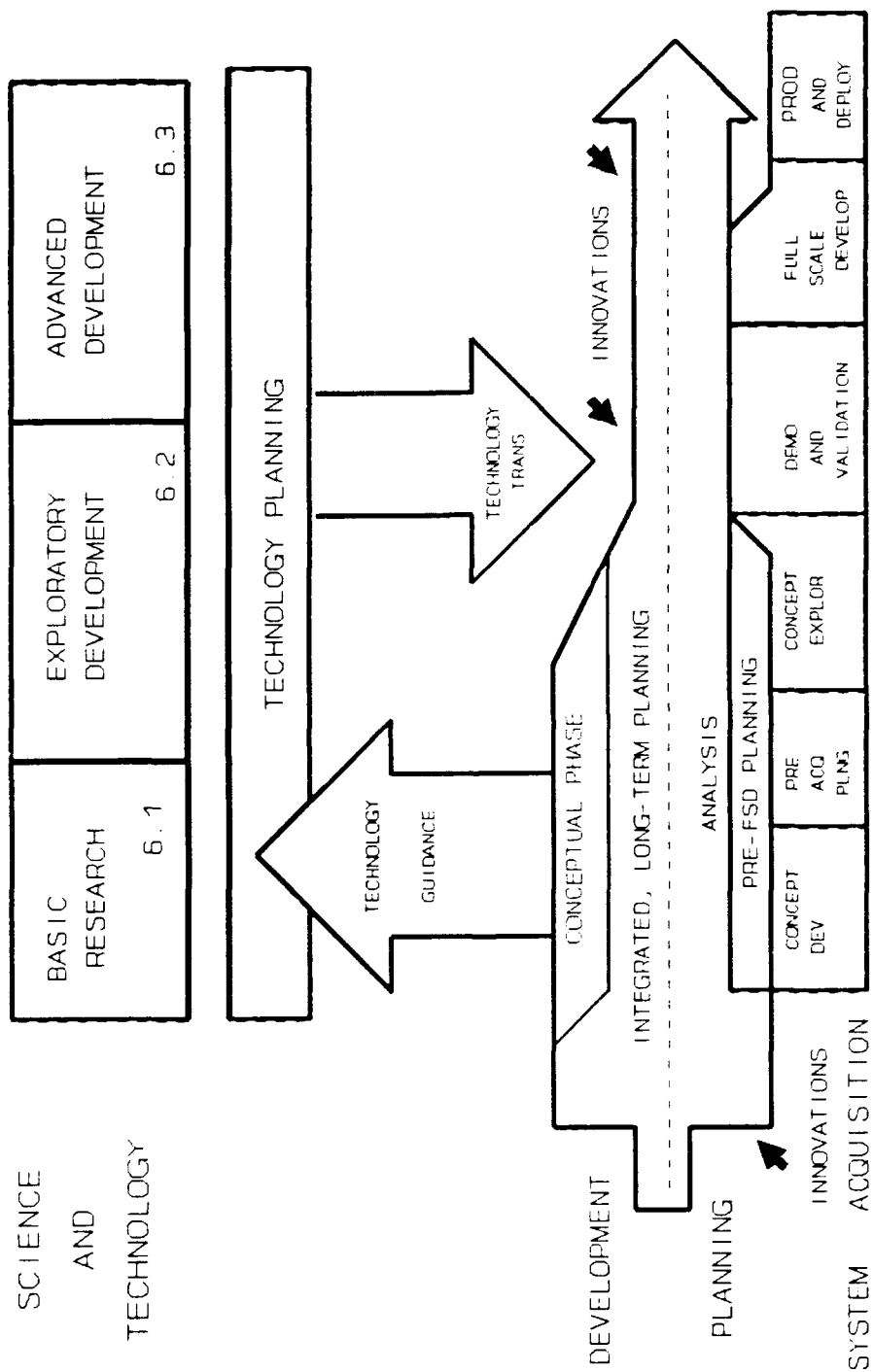


Figure 8: Development Planning Relationships (33)

pre-FSD development planning, acquisition planning, and requirements planning (18:1).

The Vanguard Planning Process. At about the same time that the HQ USAF process was being implemented, in the fall of 1978, General Alton D. Slay, then commander of AFSC, directed a new and comprehensive planning process be implemented in systems command. This planning initiative was called Project Vanguard. The Vanguard planning process, along with technology planning, are subsets of the development planning process.

Vanguard is a threat-based, "requirements pull" process whose initial objective was to develop "... an integrated plan which shows clearly the contribution and interrelationships of each exploratory, advanced, and engineering development project as well as acquisition projects" (19). Vanguard underwent a major revision in 1981 when its focus was changed to relating user defined requirements into an operational capability, and integrating technology planning into the overall process by providing a focus for technology thrusts and transition plans. The Vanguard process basically started where the HQ USAF process left off - with the GA and PGM.

These documents, along with other top-level plans such as, USAF Planning Guide, USAF Strategy and Policy Assessment (SPA), Defense Planning Guidance (DPG), USAF Planning Input for Program Development (PIPD), and the Joint Strategic

Planning Document (JSPD), are used as the initial inputs to the Vanguard planning process which was conducted at HQ AFSC. Even though this planning process has been in place for a number of years, the recently published DMR states that the restructured DPG will contain a 20-year "road map" of projected modernization needs and investments constrained for future funding (5:6). The conceptual approach used for the initial Vanguard planning process

... was based on the premise that a good planning system should do three things well. It should analyze available capabilities and compare them with what is required; it should synthesize programs to make up the difference; and, it should provide a means for integrating these programs into a cohesive, meaningful whole which is tied to the real world of equipment and operations. (19)

To accomplish this, Vanguard was divided into 10 separate mission areas. This was done to align Vanguard's mission area analysis with the mission areas used at HQ USAF for budgeting purposes. The 10 mission areas were: strategic offense; strategic defense; tactical; mobility; space systems; command, control, communications, and computers (C4); special operations forces; reconnaissance/intelligence; electronic combat; and war reserve material/air base operability.

The Vanguard process, shown in Figure 9, started by reviewing the previously mentioned planning documents to determine national objectives, future directions, and projected threats. These factors were analyzed by product

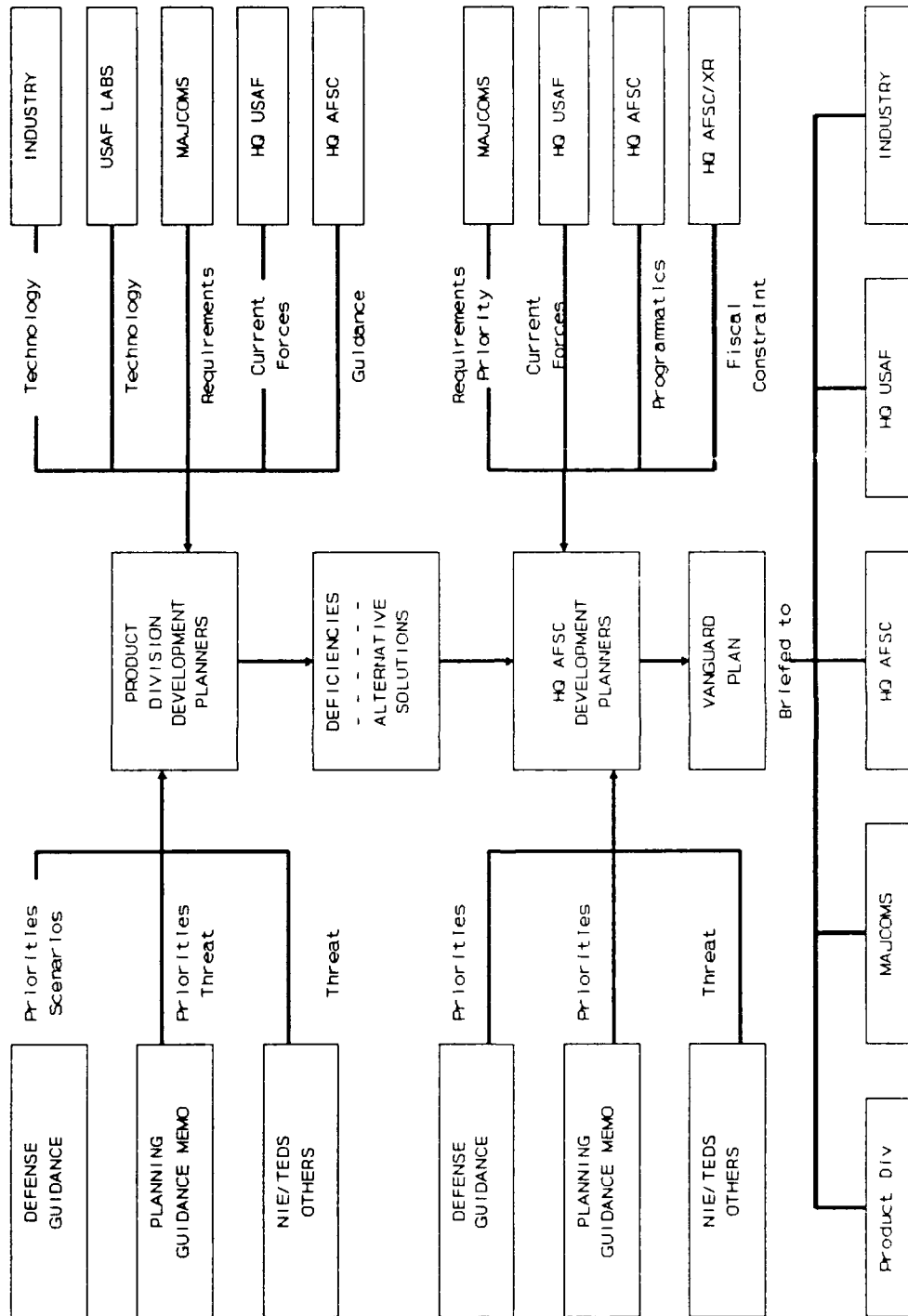


Figure 9: The Vanguard Planning Process (20)

division development planners in concert with user requirements to develop a future force structure that would counter the threat and meet the operational objectives. This future force structure was then compared to the current force structure to identify mission deficiencies. Next, a list of proposed weapon system concepts was developed to significantly reduce or eliminate the stated mission deficiencies. The process then shifted to HQ AFSC where the programs that made up each mission area were analyzed and prioritized using standard computer-based quantitative methods (19). A set of fiscally unconstrained alternative weapon systems concepts was then proposed to correct each deficiency. These were feasible concepts based on current or maturing technologies from both USAF and industry laboratory research (20).

This initial unconstrained investment program usually exceeded the projected available financial resources (20). Therefore, through a parallel process called forecast, the total obligation authority (TOA) for the Air Force research, development, test and evaluation (RDT&E) and procurement funds was constrained to the projected outyear budget. The initial iteration of forecast was the unconstrained version of the mission area analysis that eliminated all deficiencies without regard to cost. Since the POM years could not be affected, this created a bow wave effect starting the year after the POM and continuing throughout

the planning horizon. Forecast then proceeded through an iterative process to reduce the budget of the combined ten mission areas to a "realistic" funding limit. This funding constraint line was based on 20-year historical experience and the postulated future environment to estimate future funding levels. This amounted to a one percent "real" growth per year for the 20-year horizon.

Forecast was accomplished by theoretically deleting, cutting, stretching, or slipping individual programs within each mission area. Cutting a program entailed reducing the funding profile, or eliminating some performance or logistic requirements. Stretching a program entailed keeping the same amount of total funding, but changing the funding profile by spreading it out over more years. Slipping a program entailed keeping the same funding profile, but starting the program at a later date. Both of the latter options resulted in funds dropping off the end of the planning horizon to help reduce the total TOA. Usually, after several iterations, a pro rata cut was applied across all mission areas to produce the final iteration - a 20-year investment program that would best meet the operational needs within realistic budget constraints.

Regardless of the simplicity or complexity of the exercise, all strategic planning involves forecasting: projecting our interests or objectives and assessing their relevance for the time period in question, projecting the key variables that will drive the alternative environments in which we must operate, and

projecting the impact of our actions (our strategy) on the alternative environments (32:94)

The forecast process was executed by a senior-level Program Evaluation Group (PEG), made up of experienced and technically expert colonels, because the iterations could not be modelled through quantitative methods.

The key to progress in this field [futurology] has been the recognition that in dealing with the future, especially in "soft" areas such as social, political, and economic development, we have no firm laws providing the kind of predictive power associated with the laws of physics, but must rely largely on intuitive understanding and perceptiveness of experts in the relevant areas. (32:61)

This constrained investment program and the related enabling technologies then formed the basis for the Science and Technology (S&T) investment strategy. Since it takes 10-20 years for technology to mature, this investment strategy is needed now to support FSD of the future operational capabilities (systems). This S&T investment strategy is approved by the Air Force Acquisition Executive (AFAE) and becomes an input to the AFSC Program Objective Memorandum (POM).

The results of the Vanguard planning process were presented in a briefing format for each mission area to the applicable product division and MAJCOM, the HQ AFSC board and the panel structure at HQ USAF, and industry; and was documented in the Vanguard Planning Summary (VPS) report. The VPS documents, "... a comprehensive description of a

recommended research and development (R&D) program strategy which represents the highest potential return on investment over the next 20 years" (20).

Technology Planning. Whereas the Vanguard long-range planning process is referred to as "requirements pull," technology planning is referred to as "technology push". This means that as technologies are matured through laboratory research, they are "pushed" or guided to the appropriate weapon systems concepts developed in the Vanguard planning process. Technology planning:

- (1) Sets up a framework for [basic] research [6.1], exploratory development [6.2], and advanced [technology] development [6.3 ATD] needed for science and technology programs.
- (2) Establishes near- and long-term objectives for core technology and thrusts that are responsive to Air Force capability needs. (18:3)

For the most part, these efforts are tied to specific user requirements and weapon system concepts and, when mature, will transition to a system program office (SPO) to support FSD.

There are also a number of technologies that are not tied to a specific user need, but which are thought important enough to keep the funding alive. These technological opportunities or drivers form the tie between technology planning and mission area planning, which is done through the Vanguard planning process. This mission area planning will focus these technologies and guide them to the appropriate weapon system concept(s).

The key to the relationship between the technology area plans and mission area plans is the technology driver. Again, the technology drivers are those crucial functional capabilities of the system or subsystem. They are the show stoppers. They are the bridge from mission area plans to technology area plans that help identify the critical technologies. (33)

These critical technologies are then included in a technology area plan (TAP), which includes a road-map detailing the link to a validated user need, and the availability and funding of each technology. There are a number of technologies in each TAP and there are 13 TAPs that make up the S&T investment program.

These 13 TAPs are briefed to the AFAE and, once approved, form the basis for the direction, funding, and guidance to the laboratories for the ensuing year. The results of the TAP process are documented in the S&T and Development Planning Guide which is the executive summary of the S&T investment strategy and development planning activities (33).

Another method for producing revolutionary technologies is to sponsor a "technology push" study much like the two studies previously mentioned. The third study in that series, called Project Forecast II, was completed in the summer of 1985. This study followed the basic format of the other two, and generated over two thousand ideas. A number of panels, composed of civilian and military experts, reviewed the ideas and reduced the number to 70 feasible,

technological initiatives (31:34). These 70 initiatives were further broken down into 39 technological opportunities and 31 advanced systems concepts. The laboratory and development planning communities immediately began work on these 70 initiatives, and some initial results have already been produced.

The Requirements Process. This process is being discussed to show the interrelationships with the development planning process, and how the requirements process fits into the overall long-range planning picture. The requirements process consists of the Statement of Operational Need (SON) mission area analysis conducted by the user, see Figure 10, and the supporting analysis and coordination, sometimes called concept definition, that is provided by AFSC, as shown in Figure 11. These activities are also known as pre-milestone 0 planning. The formal requirements process is documented in Air Force Regulation (AFR) 57-1, Operational Needs, Requirements, and Concepts, which is "... the principal mechanism by which operational commands identify requirements to correct deficiencies through statements of operational need (SONs)" (18:7).

In identifying these needs, they consider deficiencies, technological opportunities, and expanded missions. Deficiencies typically result from threat changes, redefinition of assigned tasks in response to shifts in national security policy, or deterioration in operational performance of older systems. Technological opportunities arise when technological advances make possible increased operational effectiveness or lower costs. (10:14)

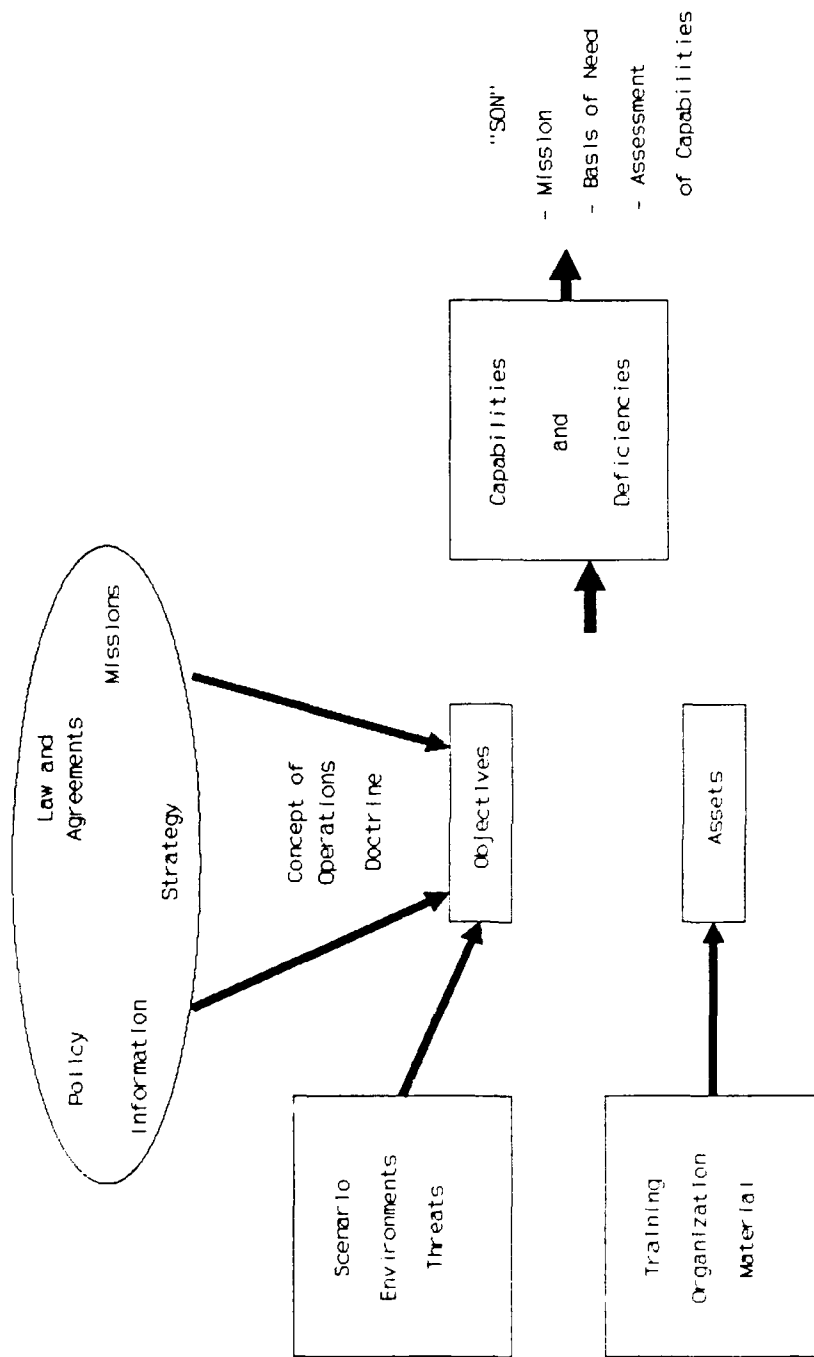


Figure 10: User-Conducted SON Mission Area Analysis (15)

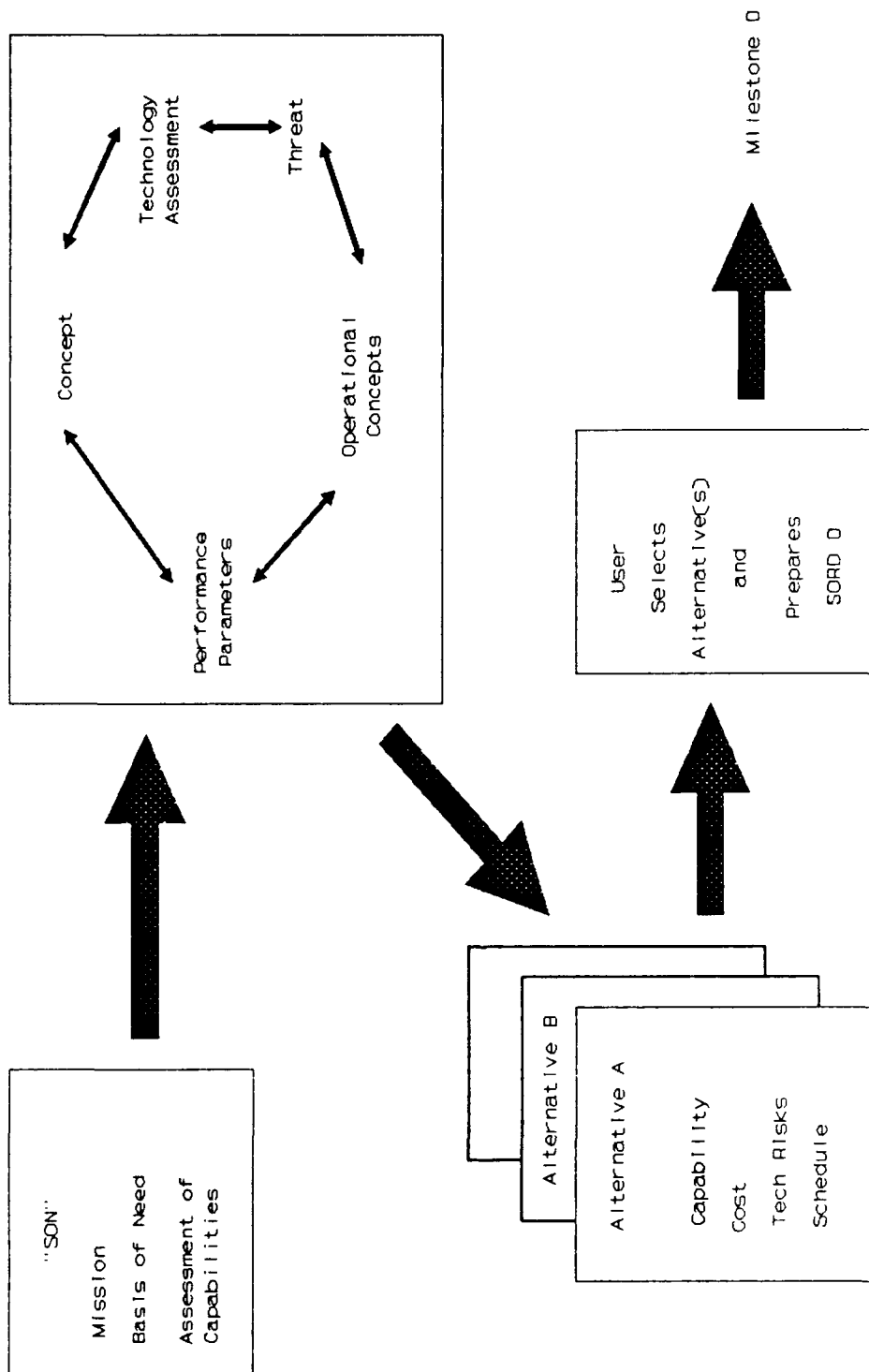


Figure 11: AFSC Analysis of Pre-Milestone D Activities (15)

These SONs, once validated, form the basis for the HQ USAF produced Mission Need Statements (MNS) that are required for a milestone I decision. This process also supports the concept definition studies which are conducted between milestones 0 and I, the results of which are used to determine program approval at milestone I, as shown in Figure 12.

The operating commands use the deficiencies developed in the Vanguard process and, to the extent possible, the technologies developed through technology planning as the basis for the SON. AFSC then uses these SONs to define weapon system concepts and technology drivers to address the validated needs, because

AFSC's development planning community has expertise in both operational requirements and emerging technology possibilities. The merger of these two areas should complement the formal requirements process by identifying revolutionary concepts that exploit new technologies to accomplish objectives and yield dramatic improvements in capability. (18:7)

Top-Level Direction. The idea for a long-range planning process in the Air Force is not new. As was previously discussed, the genesis of long-range planning in the Air Force came shortly after WWII. Since then, sporadic, isolated efforts and frameworks have surfaced for a short time only to be engulfed by a bureaucratic/political tidal wave. This interest in planning becomes more evident as the upper-level documents and directives are reviewed.

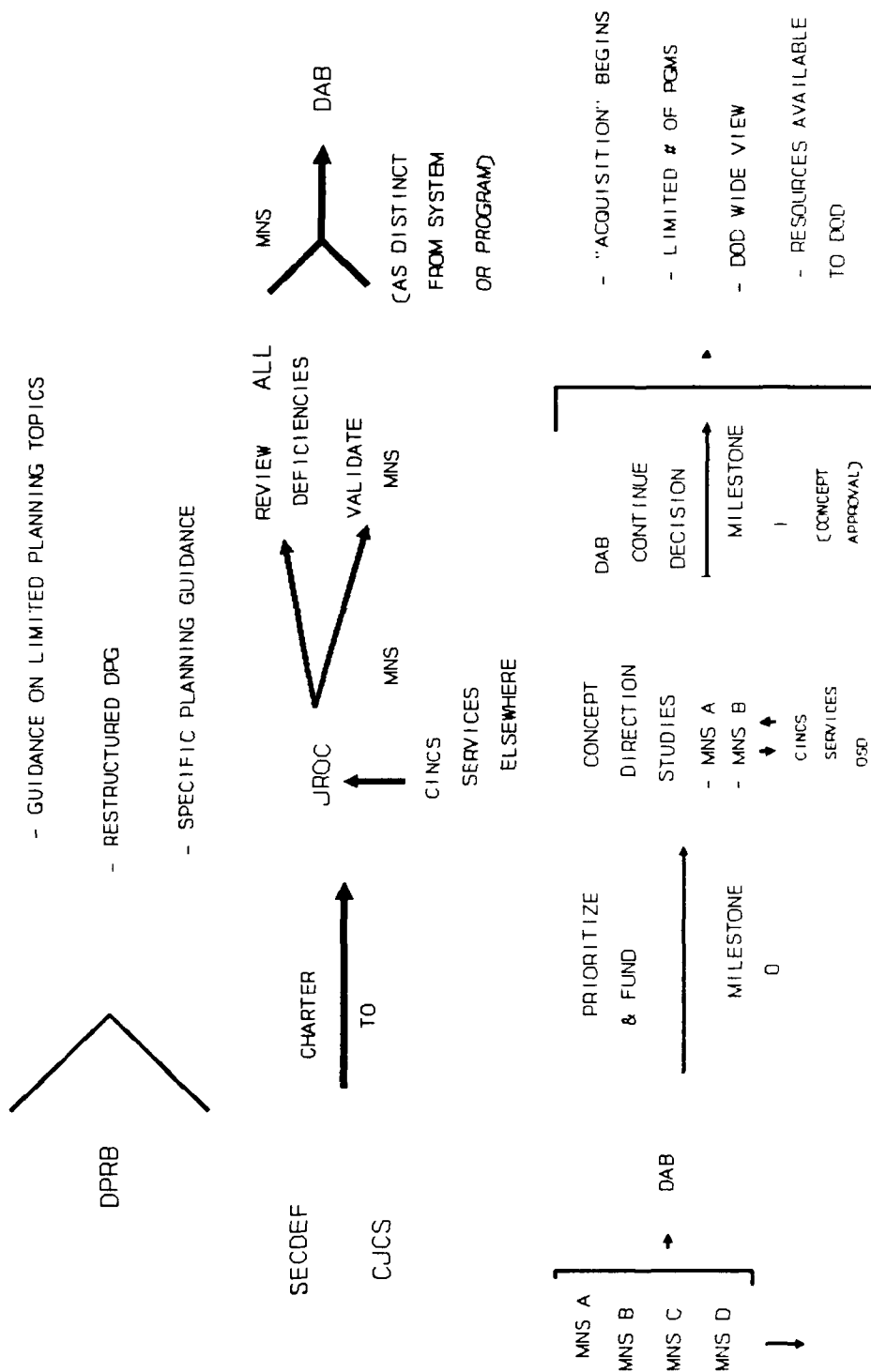


Figure 12: Requirements Planning Process (33)

Most of these sources provide documentation for top-level general policies and procedures that pertain to developing and implementing a long-range planning framework in the DoD and the Air Force. Of course, this is only a framework which each service, governmental agency, or department would need to tailor for the specific objectives and missions of their particular organizations.

The Defense Reorganization Act of 1986, Sec. 153, stipulates that:

... the Chairman of the JCS, subject to the authority, direction, and control of the President and the Secretary of Defense [shall accomplish] (2) STRATEGIC PLANNING-(A) Preparing strategic plans, including plans which conform with resource levels projected by the Secretary of Defense to be available for the period of time for which the plans are to be effective. (B) Preparing joint logistic and mobility plans to support those strategic plans and recommending the assignment of logistic and mobility responsibilities to the armed forces in accordance with those logistic and mobility plans. (C) Performing net assessments to determine the capabilities of the armed forces of the United States and its allies as compared with those of their potential adversaries. (24:5)

This not only charges the Chairman of the JCS with strategic planning, it charges him with constraining the strategic plans to the available budget, and providing logistic (supportability) and mobility (transportability) plans as well.

The draft DOD Directive (DODD) 5000.1, Policies Governing Defense Acquisition and draft DoD Instruction (DODI) 5000.2, Defense Acquisition Management Policies and

Procedures, "... rank first and second, respectively, in order of precedence for providing policies and procedures for managing acquisition programs, except when statutory requirements override" (13:2). These top-level documents establish an integrated, disciplined management approach for acquiring major and non-major weapon systems that meet the needs of the operational user. Among other things, DoDD 5000.1 provides for "An integrated framework for translating broadly stated mission needs into stable, affordable acquisition programs that meet the user's stated needs and can be sustained given projected resource constraints" (13:5). This sub-approach is further broken up into five elements, one of which deals with long-range program planning.

1. Long-Range Program Planning. Broad 12-year modernization and investment program plans shall be developed for each Military Department and the Department of Defense.
 - a. The program plans shall be based on the best estimate of future topline fiscal resources and form the basis for making long-range affordability assessments of acquisition programs.
 - b. The Deputy Secretary of Defense shall approve the general nature of the program plans and provide affordability planning guidance for structuring major defense acquisition programs.
 - c. The Under Secretary of Defense (Acquisition) shall prepare long-range acquisition investment area analyses. The analyses are to:
 - (1) Provide insights for determining the timing and affordability of proposed new start acquisition programs;

- (2) Identify highly promising technological opportunities for possible exploitation; and
- (3) Assess the potential outyear impact of the defense acquisition program on the U.S. technology and industrial base. (13:5-6)

It is interesting to note that this description of long-range program planning includes the identification and exploitation of technological opportunities. This is probably the most important task of the long-range planners in the Air Force as has already been discussed.

Air Force Regulation (AFR) 800-1, Air Force Acquisition System, implements DoDD 5000.1 and DoDI 5000.2, and defines the specific Air Force responsibilities and authority for developing and acquiring weapon systems to meet stated operational needs. This regulation tasks the Assistant Secretary of the Air Force for Acquisition (ASAF/A), who is the senior acquisition operating official in the Air Force, to

- (16) Guide overall acquisition investment and development planning efforts.
- (17) Establish policies for concept definition and evaluation studies. (9:3)

It further requires the acquisition commands, which are the key support organizations necessary to ensure effective support of all programs, to

- (3) Support long-range development and weapon system support planning; coordinate closely with the users to formulate and iterate system concepts in response to requirements.
- (4) Direct concept definition and evaluation studies, coordinating with both the user and

affected PEO's to develop alternative solutions to validated needs prior to Milestone I. (9:5)

Long-Range Planning Benefits

Some of the planning benefits have already been discussed in previous sections of this literature review. This section will highlight the most important of these long-range planning benefits. There are three benefits that stand out as the most important. They are a) to have the full support of top-level management, b) have top-level management actively involved in some aspect of the planning process, and c) have a feedback mechanism to measure planning performance (32:32; 26:32). Another important benefit is for top-level management to issue top down guidance so the organization has clear direction on the long-range objectives and plans for obtaining those objectives (32:33).

In two studies dealing with strategic planning methods at Aeronautical Systems Division (ASD), the benefits of long-range planning were found to be more efficient resource allocation, better quality decision making under varying conditions, the ability to explore alternatives, the capability to deal with change, the flexibility to change with the situation, and an increase in the communication and participation in the process (8:62; 31:7). In fact, the success of ASD's current strategic planning process is attributable to training to understand, patience in waiting

for results, tying individual strategic planning performance to evaluations, and recognizing that the process of thinking and planning for the future is equally as important as the plan that results (31:viii).

Some additional planning benefits worth noting are: identifies future growth opportunities, fosters interdepartmental coordination, impacts requirements, and identifies sources and uses of funds to allow cost savings (16:45; 23:25; 28:21). The benefits of long-range planning can best be seen from the following:

In a recent national survey conducted by Tompkins Associates Inc., 61% of the respondents said they believe long-range planning activities hold the greatest opportunities for improvement in their company's manufacturing success. (29:8)

These long-range planning benefits are summarized in Table 1.

This does not imply that every organization that has a long-range planning system is successful. Nor does it imply that every organization will realize any or all of the benefits listed above. The previously mentioned ASD studies found that the most common difficulties with strategic planning were insufficient time, unpredictable political environment, inadequately defined objectives, inexperienced managers, very difficult cognitive activity, makes evident the uncertainty of future events, reduces perceived freedom of action, is computationally tedious, and plans are often made and then ignored (8:x; 31:6). These difficulties are

Table 1. Long-Range Planning Benefits

Top level management must support the planning function

Top-level management must be actively involved in some aspect of the planning process

There must be a feedback mechanism

Top-level management should issue top down guidance and direction

More efficient resource allocation and better quality decision making

The ability to explore alternatives and the capability to deal with change

Provides the flexibility to change with the situation, and increases the communication and participation in the process

Ties individual strategic planning performance to evaluations

The process is just as important as the product

particularly true for the military where, "It is more likely that a lack of patience and the turnover of personnel due to assignments has not allowed strategic planning to take hold" (31:67). In one survey of senior planning managers, the following pitfalls were identified as the most detrimental to long-range planning:

... insufficient time for planning, generating enough alternatives, unfavorable economic situation, insufficient subordinate participation, and obtaining trustworthy data...
(28:21)

One company went so far as to say that, "... implementation of modern technology is often restricted by the lack of a

strategic plan and insufficient time to develop a plan" (29:8). Some additional planning difficulties worth noting are: forecasting errors, irrelevant goals, inflexibility, wrong assumptions, deterministic view, long-range plans without implementation, and the relatively short tenure of leaders (16:50; 23:25; 30:50; 32:7-9).

The key variable in controlling these planning difficulties is the initial implementation of the process. Successful and effective implementation of strategic planning is accomplished by avoiding or minimizing the following barriers: no time to plan, too many crises and changing priorities, information overload, too much paperwork and politics, and don't play school (1:24). These barriers lead to certain features that are critical in designing a strategic planning process for any organization which include size, structure, environment (both external and internal), technology, politics, etc.

"These factors point to the need for strategic planning that is elaborate, multilevel/multifunctional, addresses a long time horizon, whose purpose [is] to manage diversity and turbulence" (31:34-35). The criteria for implementing the ASD strategic planning process include phased implementation; widespread involvement, especially from top-level management; early and specific definitions of missions, objectives, and goals; detailed examination of the environment; feedback mechanism; and early determination of training/education requirements and issues (31).

III. Methodology

Chapter Overview

This chapter outlines the overall methodology of this research effort, and the specific methodology used to gather/analyze the data and answer the research questions. This chapter presents the specific research method used for this study, including subsections on the research design; and construct validity, internal validity, external validity, and reliability. This is followed by the justification for the particular research method used. Finally, any limitations in the methodology are discussed. By following this approach, the results of this research effort can be duplicated.

Research Method

The specific research methodology used to answer the five investigative questions was a qualitative exploratory single-case study.

- A case study is an empirical inquiry that:
- investigates a contemporary phenomenon within its real-life context; when
 - the boundaries between phenomenon and context are not clearly evident; and in which
 - multiple sources of evidence are used. (30:23)

Long-range planning is a contemporary phenomenon, as opposed to purely historical, and this study investigated planning within its real-life boundaries where there was no attempt to control any of the study variables, as opposed to doing an experiment in a laboratory setting. The very nature of

planning, as discussed in numerous places throughout this study, shows that the boundaries between planning and the environment or organization are not clearly evident, if they exist at all. Also, more than one source of evidence was used: the personal interview and a review of the available documentation pertinent to the case. The case study is but one method of accomplishing social science research. Other methods include experiments and quasi-experiments, surveys, histories, the analysis of archival information, and others (35:13).

The first two investigative questions have been answered with an in-depth literature review that detailed why long-range planning is essential for organizational success, and developed a set of planning factors that constitute a successful long-range planning system. These factors consisted of the characteristics that have the highest frequency of use from a wide range of organizations to include industry, strategic management consultants, planning institutes, and the government. The literature review was conducted through a computerized DTIC search and an extensive library review of the available long-range planning literature.

The final three investigative questions were answered through personal interviews using expert testimony and a review of the available documentation pertinent to the proposed model. "Evidence for case studies may come from six sources: documents, archival records, interviews,

direct observation, participant-observation, and physical artifacts" (35:78). The interview is one of the most important sources of case study information and may take many forms (35:82). The form used for this research effort was the open-ended interview.

Most commonly, case study interviews are of an open-ended nature, in which the investigator can ask key respondents for the facts of the matter as well as for the respondents' opinions about events. In some situations, the investigator may even ask the respondent to propose his or her own insights into certain occurrences and may use such propositions as the basis for further inquiry. (35:83)

Documentary information, in all likelihood, will be relevant to any case study topic. There are many forms of documentary information which are used to provide other specific details to validate information from other sources, and to draw inferences about a particular aspect of the case study (35:80).

Lt. Col. Ben Harvey was interviewed on 6 June 1990 to discuss the long-range planning model being proposed by HQ USAF/XOX, and a set of briefings and talking papers were obtained to review the available documentation. Lt. Col. Harvey is in charge of the office that developed the model, and he will also be in charge of its implementation. A follow-up, informal telephone question and answer session was conducted on 19 July 1990 to clarify terms and provide more detailed information about the proposed planning model. This proposed model was then evaluated against the set of

more detailed information about the proposed planning model. This proposed model was then evaluated against the set of planning factors to determine the feasibility for implementation.

Research Design. One of the most important and difficult aspects of the case study is the development of the research design. This is because, as it was mentioned before, the case study has no textbook approach or common methodology that details a list of research designs. A research design is defined as an action plan that

... guides the investigator in the process of collecting, analyzing, and interpreting observations. It is a logical model of proof that allows the researcher to draw inferences concerning causal relations among the variables under investigation. The research design also defines the domain of generalizability, that is, whether the obtained interpretations can be generalized to a larger population or to different situations. (35:28-29)

For case studies, there are five components of a research design:

- (1) a study's questions;
 - (2) its propositions, if any;
 - (3) its unit(s) of analysis;
 - (4) the logic linking the data to the propositions, and
 - (5) the criteria for interpreting the findings.
- (35:29)

The first component considers a study's questions. Yin states that, "... the form of the question - in terms of 'who', 'what', 'where', 'how', and 'why' - provides an important clue regarding the most relevant research strategy

this category. The second component considers a study's propositions where, "... each proposition directs attention to something that should be examined within the scope of study" (35:30). These propositions basically define the boundaries and purpose of the research effort. The propositions for this study can be found in Chapter 1 under the general issue, the specific problem statement, and the objectives and scope of the research.

The third component, a study's unit(s) of analysis, "... is related to the way the initial research questions have been defined" (35:31). As such, the case is the Air Force long-range planning process, and the unit of analysis is the top-level proposed long-range planning model. For the purposes of this study, the long-range planning process begins with the pre-milestone 0 activities (an identified threat that produces a validated need), and ends with the milestone I decision that provides the funding and approval to start a program. This specific time boundary limits the data collection and analysis, and the propositions further define the scope and objectives of the study.

The fourth component considers linking the data to the propositions. This component introduces the general analytic strategy, whose ultimate goal, "... is to treat the evidence fairly, to produce compelling analytic conclusions, and to rule out alternative interpretations" (35:100). There are two general strategies, that of, relying on theoretical propositions, and developing a case description.

Since the latter strategy is less preferable, the general analytic strategy of relying on theoretical propositions was used for this study.

The first and more preferred strategy is to follow the theoretical propositions that led to the case study. The original objectives and design of the case study presumably were based on such propositions, which in turn reflected a set of research questions, reviews of the literature, and new insights. (35:100)

One technique to accomplish this general strategy is to do pattern-matching. This is done, "... whereby several pieces of information from the same case may be related to some theoretical proposition" (35:33). The theoretical proposition for this study was that the proposed top-level Air Force long-range planning model was evaluated as successful and feasible for implementation. The proposed planning model was matched and evaluated with the planning factors developed through the literature review. A pattern emerged that determined whether the model would be successful or not, and feasible for implementation.

The fifth and final component considers the criteria for interpreting a study's findings. Recall that this study is a qualitative, point-in-time evaluation of the proposed top-level Air Force long-range planning model. No statistical test was accomplished, nor could one have been done, because the planning factors were developed from a review of the available literature where no variance/standard deviation or confidence interval could have been computed. In addition, "Currently, there is no precise way

of setting the criteria for interpreting these types of findings" (35:35). Therefore, for the purposes of this study, the criteria to determine if the planning model sufficiently matched the planning factors was to compare the model with a rival proposition, namely, the Vanguard planning model, to assess the likelihood of successful implementation. "One hopes that the different patterns are sufficiently contrasting that the findings can be interpreted in terms of comparing at least two rival propositions" (35:35).

Validity and Reliability. There are three types of validity; construct validity, internal validity, and external validity along with reliability, that are important aspects of any research methodology. The first aspect, construct validity, is defined as, "... establishing correct operational measures for the concepts being studied" (35:36). Of the numerous tactics that are used to increase construct validity, the one used for this study was the use of multiple sources of evidence. It has already been presented that this study will use two sources of evidence, namely, personal open-ended interviews and a review of documentary information.

... any finding or conclusion in a case study is likely to be much more convincing and accurate if it is based on several different sources of information ... the potential problems of construct validity also can be addressed because the multiple sources of evidence essentially provide multiple measures of the same phenomenon. Not surprisingly, one analysis of case study methods found that those case studies using

multiple sources of evidence were rated more highly, in terms of their overall quality, than those that relied on only single sources of information. (35:91)

The second aspect, internal validity, is defined as, "... establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships" (35:36). Since this study is exploratory in nature and does not attempt to define a causal relationship, internal validity cannot be addressed. Internal validity is used for causal or explanatory studies only, and not for exploratory or descriptive studies (35:36).

The third aspect, external validity, is defined as, "... establishing the domain to which a study's findings can be generalized" (35:36). This can be a difficult and criticized task in a single case study, however,

... critics are implicitly contrasting the situation to survey research, where a "sample" (if selected correctly) readily generalizes to a larger universe. This analogy to samples and universes is incorrect when dealing with case studies. This is because survey research relies on statistical generalization, whereas case studies (as with experiments) rely on analytical generalization. In analytical generalization, the investigator is striving to generalize a particular set of results to some broader theory. (35:39)

The broader theory for this study, recalling the theoretical proposition, is that the top-level Air Force long-range planning model can be evaluated, and deemed successful or unsuccessful, using a set of planning factors determined from an extensive, in-depth literature review. To this

extent, the findings of this research effort can be generalized and used to evaluate other long-range planning models, whether they come from the government or industry.

The final aspect, reliability, is defined as, "... demonstrating that the operations of a study - such as the data collection procedures - can be repeated, with the same results" (35:36). Again, there are numerous tactics to increase the reliability of the research methodology, and the one used for this study was to establish and maintain a chain of evidence. "Another principle to be followed, to increase the reliability of the information in a case study, is to maintain a chain of evidence" (35:96). This principle,

... allow[s] an external observer to follow the derivation of any evidence from initial research questions to ultimate case study conclusions. Moreover, this external observer should be able to trace the steps in either direction (from conclusions back to initial research questions or from questions to conclusions). (35:96)

This provides the assurance that the same evidence that appears in the report is the same evidence that was collected during data collection (by citing specific documents or interviews), is the same evidence that is consistent with the study's procedures and protocol, and is the same evidence used to link this protocol with the initial research questions (35:96). For this study, the derivation of evidence is supported by the general analytic strategy that relies on the theoretical proposition which has already been discussed.

Methodology Justification

Case studies have long been stereotyped as a weak or less desirable form of research methodology. Yin notes that, "Although the case study is a distinctive form of empirical inquiry, many research investigators nevertheless have disdain for the strategy" (35:21).

In spite of this stereotype, case studies continue to be used extensively in social science research--including the traditional disciplines ... as well as practice-oriented fields such as urban planning, public administration, public policy, management sciences, and education. The method also is a frequent mode of thesis and dissertation research in all of these disciplines and fields. (35:10)

Case studies have also been stereotyped as less rigorous or more "qualitative" in nature. In most instances this is by design.

The data are to be collected from existing people and institutions, not within the controlled confines of a laboratory, the sanctity of a library, or the structured limitations of a rigid questionnaire. Thus, in a case study, the investigator must learn to integrate real-world events with the needs of the data collection plan; in this sense, the investigator does not control the data collection environment as one might in using other research strategies. (35:67)

As for the perceived "qualitative" nature of case studies, "... case studies can include, and even be limited to, quantitative evidence. In fact, the contrast between quantitative and qualitative evidence does not distinguish the various research strategies" (35:24). There are three conditions that do distinguish among the various research strategies. They are: (a) the type of research question

posed, (b) the extent of control an investigator has over actual behavioral events, and (c) the degree of focus on contemporary as opposed to historical events (35:16).

The first condition considers the type of research question posed. This study has five research questions, two of which are "what" questions, two are "how" questions, and one is a "why" question. According to Yin, "... the form of the question provides an important clue regarding the appropriate research strategy to be used" (35:19). If the "what" questions are exploratory in nature (as they are for this study), then any research strategy may be used; while the "how" and "why" questions are more explanatory and will likely lead to the use of case studies (35:18).

The second condition, which considers the extent of control an investigator has over actual behavioral events, and the third condition, which considers the degree of focus on contemporary as opposed to historical events, can be discussed concurrently. Historical studies are preferred when there is virtually no access or control and historical events are the focus of the study, while experiments should be used when the investigator can manipulate behavior by isolating one or more key study variables (35:19-20). On the other hand,

The case study is preferred in examining contemporary events, but when the relevant behaviors cannot be manipulated. Thus, the case study relies on many of the same techniques as a history, but it adds two sources of evidence not usually included in the historian's repertoire: direct observation and systematic interviewing ...

the case study's unique strength is its ability to deal with a full variety of evidence - documents, artifacts, interviews, and observations. (35:19-20)

The important thing to remember when dealing with social science research strategies, especially the case study, is that there are no hard and fast rules or definitized algorithms to guide the investigator.

Unlike statistical analysis, there are few fixed formulas or cookbook recipes to guide the novice ... Instead, much depends on an investigator's own style of rigorous thinking, along with the sufficient presentation of evidence and careful consideration of alternative interpretations. (35:99)

The different methods overlap and there are situations where all strategies may be relevant, other situations where two strategies appear to be equal, and still other situations where more than one strategy may both be used for a single study (35:20). The key element is to identify the situations where a specific strategy has a distinct advantage, and for this research effort that is the case study.

In general, case studies are the preferred strategy when "how" or "why" questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context. (35:13)

Limitations

There were no unusual aspects or steps in this methodology. However, the most significant limitation was the availability and knowledge of the interviewee. By

interviewing the key individual associated with the development and implementation of this proposed long-range planning model, it is hoped that this limitation was minimized. Also, another minor limitation could have been any bias that was introduced during the research effort. By interviewing only one individual, and using multiple sources of evidence to support the conclusions, it is hoped this limitation will not adversely impact the results of this research study.

IV. Analysis and Findings

Chapter Overview

This chapter details the analysis that was used to determine the planning factors and reports the findings of the research study. First, the planning factors were identified from the literature search and the planning process models described in Chapter II. These factors were chosen based on the frequency of use throughout the review of the available literature. The Vanguard planning process was then evaluated based on the planning factors to determine the success of an already established long-range planning system, which, at the time, was the only top-level long-range planning process in the USAF. Next, the proposed long-range planning model developed at HQ USAF/XOX was evaluated based on the same set of planning factors to determine the success of the top-level Air Force planning system. Any deficiency found in the proposed model was discussed, and recommendations for correction, based on current methodologies, are described in Chapter V.

The Planning Factors

The planning factors were determined from an extensive, in-depth literature search and a review of selected long-range planning process models. In reviewing the literature it becomes evident that these factors are key ingredients in determining organizational success. It should come as no surprise that many of these factors match exactly, or are

directly related to, the planning benefits described in Chapter II. The factors with the highest frequency of use are shown in Table 2.

Table 2. Long-Range Planning Factors

-
1. Full support of top-level management
 2. Top-level management actively involved in some aspect of the planning process
 3. Feedback mechanism to measure planning performance
 4. Top-level management issues top down guidance
 5. Identifies organizational goals, objectives, and missions
 6. Develops alternatives and strategies, and projects environments
 7. The process must be iterative and on-going
 8. The process must be flexible
 9. All the players must be involved in the process, both with implementation and execution
 10. The process should increase communication and participation
-

The top four factors were the most frequently used factors by a 3:1 margin. One author states,

... there would still be no aggressive long-range planning in any [society] if one crucial, priceless ingredient were missing. That precious ingredient is the personal interest of top management ... Without this push it could not have succeeded as it has. (14:5)

The study group formed by former Secretary of the Air Force Stetson, which was described previously in Chapter II,

visited several major corporations and discovered a few principles that could guide the USAF in developing a long-range planning process.

- a. Active support by top leadership is essential to successful and enduring strategic planning because it helps bring along the rest of the bureaucracy.
- b. Top leadership should participate regularly in an interactive process to prevent the planners from developing unacceptable products.
- c. The leadership should issue top down guidance to make clear the organization's long-range objectives and plans for reaching those objectives. (32:33)

Planning factors 5 and 6 are the heart of any long-range planning system. Long-range planning must provide a framework to aid the decisionmaking process to identify goals, objectives, and strategies. "Within non-profit and governmental organizations priorities are often set by boards of executives and commanders, based on their understanding of the environment" (31:19). In the Air Force, this board of directors is called the Defense Planning and Resource Board (DPRB). The planning process at Aeronautical Systems Division (ASD), for example, uses a formal approach for economic analysis, the definition of objectives, and the allocation of funds; and uses an informal approach for requirements analysis, political analysis, threat analysis, organizational analysis and structure, consideration of objectives prior to plan development, allocation of manpower, development of

alternative courses of action, and the testing of planning assumptions and plans (8:ix-x).

The last four factors are basically the upkeep and maintenance of the planning system. It would be idealistic to think that the requirements, funding, environment, threat, and congressional legislation would stay the same for the entire life of a program. Since this is not the case, and probably never will be, the long-range planning process must remain flexible and iterative to respond to changes in these and other areas. One of the main downfalls of previous planning systems was that all of the players were not involved in the process or the decisions that affected them. All too often the long-range planning decisions were isolated to a select group of individuals or in the headquarters. "A 1984 Business Week article emphasized that corporations have learned that strategic planning will not succeed if it is isolated in the Headquarters. Operating divisions must be actively involved" (32:40). Finally, by its very nature, the long-range planning process will increase the communication and participation in the process. A formalized, comprehensive, written strategic plan will increase communication, aid the decision-making process, orient new organizational members, and make it easier to perform organizational and personnel evaluations (1:8-9).

Evaluation of the Vanguard Planning Model

The Vanguard planning model, which was described in detail in Chapter II, was designed to relate user requirements, threat, and current and future force structure into future weapon systems concepts to increase the nation's warfighting capability. The initial objective was to help the MAJCOMs better allocate their resources in the POM years by developing a fiscally constrained 20-year roadmap of weapon system concepts and the S&T investment program. In fact,

Many seasoned Air Staff officers thought this was the key to determining the success of the new long-range planning system, actually influencing how the limited resources were allocated among competing requirements during the annual POM battle. (32:35)

The Vanguard process was started in 1978 and, until its demise in 1988, was the primary management tool for integrated, long-range planning in AFSC. It should be noted that Vanguard was an AFSC process and product, and did not influence the long-range planning matters of HQ USAF or the Air Force as a whole. As such, the top-level leadership for Vanguard was the commander of AFSC and his staff. Inasmuch as the commander signed out the top down guidance for the process and the Vanguard plan (the product) each year, Vanguard had the support of the top-level management. This satisfies the first planning factor. It also satisfies planning factor 4, because the commander issued and signed

the top down guidance to the field organizations and laboratories.

Providing guidance and policy direction could be considered a part of the planning process, but overall the commander was not actively involved in the Vanguard process. This partially satisfies planning factor 2. The commander became involved only at the end of the process and did not participate in the iterative review cycles that preceeded these actions. Top-level management in industry uses the planning framework to identify organizational goals and objectives, and to develop strategies and alternatives to meet those goals and objectives. The AFSC commander did not identify organizational goals and objectives, this was done by the National Security Council (NSC), the JCS, and the President. He also did not develop Vanguard specific strategies and alternatives, this was done at a much lower level, usually at the product divisions. Therefore, planning factor 5 was not met at all, and planning factor 6 was partially met. This does not mean that the commander did not develop any strategy or policy. He is involved with the Acquisition Strategy Panel (ASP), the Program Management Directive (PMD) (AFSC Form 56), and other related documents.

One of the most important aspects of any long-range planning process is a feedback mechanism to measure planning performance, which relates to planning factor 3. This applies to system performance as well as the individual

performance of those who implement and use the system. This turned out to be one of Vanguard's weakest areas. This feedback mechanism was never established and Vanguard deteriorated into a once-a-year, "update the previous year's plan" exercise. There was no real correlation and continuity between successive years, very little new mission area analysis, and only a few minor exercises and studies were accomplished between the update cycles.

Recall that the Vanguard process was broken up into a mission area analysis phase and a forecasting phase. The Vanguard process was iterative during the forecasting phase in that the outyear funding profiles were reduced iteratively to reach a realistic budget constraint. The process should also have been iterative during the off cycle when it could remain flexible to adjust to changes in the environment, threat, requirements, technology, etc. This did not happen and the process actually became too rigid and inflexible. The product was more programming than planning, it concentrated on evolutionary user requirements to the exclusion of revolutionary concepts, there developed an inability to consider changes across mission area boundaries, and there was little or no tie between technology development and requirements (7). Thus, planning factor 7 was partially met, while planning factor 8 was not met at all.

Another problem with Vanguard was that some of the major participants were not involved in applicable parts of the process, or in the decisions that affected them. This deficiency relates to planning factor 9. Ironically, an early version of the Vanguard pamphlet states, "We know that 'ivory tower' planning, without the benefit of frequent interface with the operational commands, does not lead to credible or useful results" (21:1). The operational commands usually validated the deficiencies resulting from their stated requirements, then did not participate in the process until the results were briefed to them sometime later. The product divisions would provide the initial analysis and alternative weapon system concepts, then also be absent from the process until the results were briefed to them, again at a later date. Since some weapon system concepts and/or product division subplans spanned mission areas, the job of consolidating all this information into a single mission area plan was left up to the particular mission area planner at HQ AFSC/XR. Also, the forecasting phase was done solely by the Program Evaluation Group (PEG), a group of technically expert colonels in HQ AFSC/XR. This was basically done in a vacuum with no input from any other source.

The final planning factor states that any long-range planning system should increase communication and participation in the process. This did not happen with

Vanguard, in fact, as time progressed these areas actually decreased. As the product was used less and less, and it became apparent that the MAJCOMs were not using Vanguard to aid in their POM development, user and Air Staff involvement in developing long-term needs diminished, and the product divisions provided less than enthusiastic support (7). The Vanguard product was considered to be primarily an AFSC planning tool that was updated annually and remained in the safe the rest of the year. The communication and participation became so bad that the annual briefings were delegated from the MAJCOM and product division commanders to lower level divisions who had little or no interest in planning and provided no significant comments or insights to the plan or the process.

Even though the Vanguard planning process had its merits, the problems of the actual product and personal perceptions eventually spelled its demise. This fact is backed up by the following typical statement, expressed by numerous people associated with the process, "... most of the formal program office plans have received little use after being developed, yet, the benefit of the plan was the experience gained through putting the plan together" (8:x). The evaluation of the Vanguard model is summarized in Table 3.

This shows that the Vanguard model meets only two of the planning factors, and partially meets three of the

planning factors. In five cases the model does not meet the planning factor at all. The methodology states that a successful long-range planning model must be compared to a rival proposition to be assessed as being successful, therefore, the evaluation of the Vanguard long-range planning process based on the set of planning factors indicates that Vanguard cannot be considered to have been a successful long-range planning model.

Table 3. Summary of the Vanguard Planning Model

Planning Factor	Does the Model Meet the Planning Factor?		
	Yes	Partially	No
1	X		
2		X	
3			X
4	X		
5			X
6		X	
7		X	
8			X
9			X
10			X

The Proposed HQ USAF Long-Range Planning Model

The proposed HQ USAF long-range planning model is a revised planning system based on recommendations from the Goldwater-Nichols Act, the Packard Commission, and the Chairman of the JCS Memorandum of Policy (MOP) 7, which all suggested and endorsed a Biennial Planning, Programming, and

Budgeting System (BPPBS). The CJCS "MOP 7" is JCS staff policy issued to the services and Commanders In Chief (CINCs) for guidance which revises the Joint Strategic Planning System (JSPS) establishing the first comprehensive change to the two year planning system since the Goldwater-Nichols Act. This model will more align the Air Force system to the JSPS and promote more timely and accurate inputs from the Air Force planning system (22).

The current DoD/CJCS biennial system and the major documents that support this system are shown in Figure 13. In the two year cycle, one year is a programming year and one year is a planning year. After the programming phase, there is a budgeting phase that develops the Budget Estimate Submission (BES) based on the Program Decision Memorandum (PDM), and the President's Budget (PB) based on the Program Budget Decisions (PBD). The programming phase is basically the "bridge" that covers the gap between the planning phase and the budgeting phase. The service POMs are due to OSD around the April timeframe. The POMs then go through the Chairman's Program Assessment (CPA) and an issues cycle which result in the PDM. After another issues cycle, where the service POMs are updated by the PDM, the BES is submitted to OSD. Finally, after a budget adjustment process done jointly by OSD and the Office of Management and Budget (OMB) the PB is submitted to Congress (22).

At about the same time that the service POMs are due to OSD, the Joint Strategy Review (JSR) is begun by the JCS.

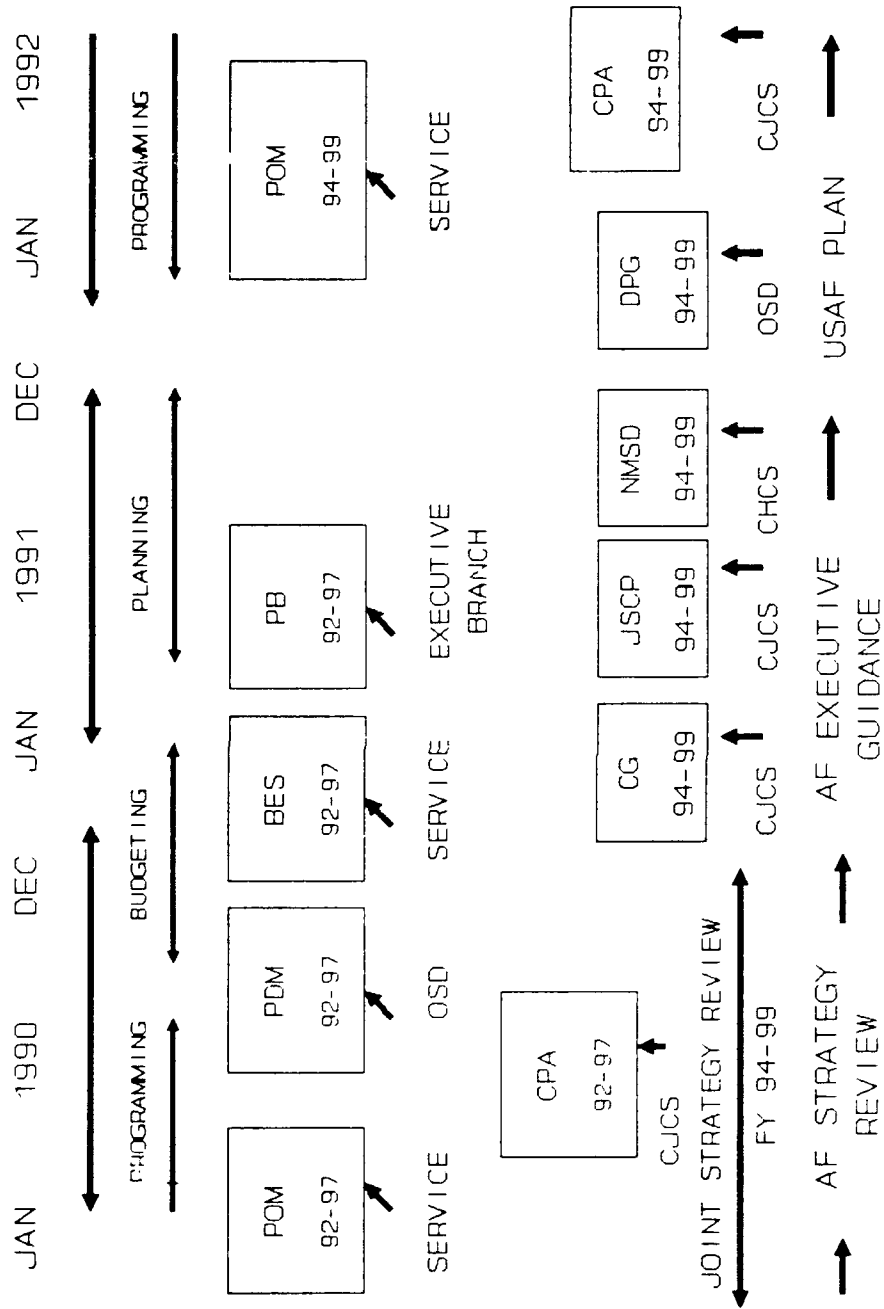


Figure 13: The Joint DOD/CJCS Biennial System (22)

At the end of this review the Chairman's Guidance (CG) is published and signed by the CJCS. This provides the framework for developing the National Military Strategy Document (NMSD), which replaced the Joint Strategic Planning Document (JSPD). The Joint Strategic Capabilities Plan (JSCP) is also published, which is a spinoff of the CG. The final document published in the planning phase is the Defense Planning Guidance (DPG) which details the SECDEFs policy, strategy, force and resource planning, and fiscal guidance to all DoD organization's (22; 2:18). This marks the end of the planning phase. These DoD organizations now use the DPG in the development of their respective POM's.

The revised Air Force planning system timeline and how it interacts with the biennial system is shown in Figure 14. It is important to note that this process brings together the SECAF and CSA for the first time in jointly developing and implementing the top-level Air Force long-range planning issues. The Air Force planning system consists of three parts: the Air Force strategy review, the Air Force Executive Guidance, and the Air Force plan. The alignment of these three phases is critical to the timing and impact that the key issues will have on the senior leadership. The Air Force strategy review, which is headed by HQ USAF/XOX, coincides with the JSR to provide the senior leadership with the Air Force's key issues. These issues are detailed in position papers used to make an impact in the JSR, as well as to adjust the papers based on JSR deliberations (22).

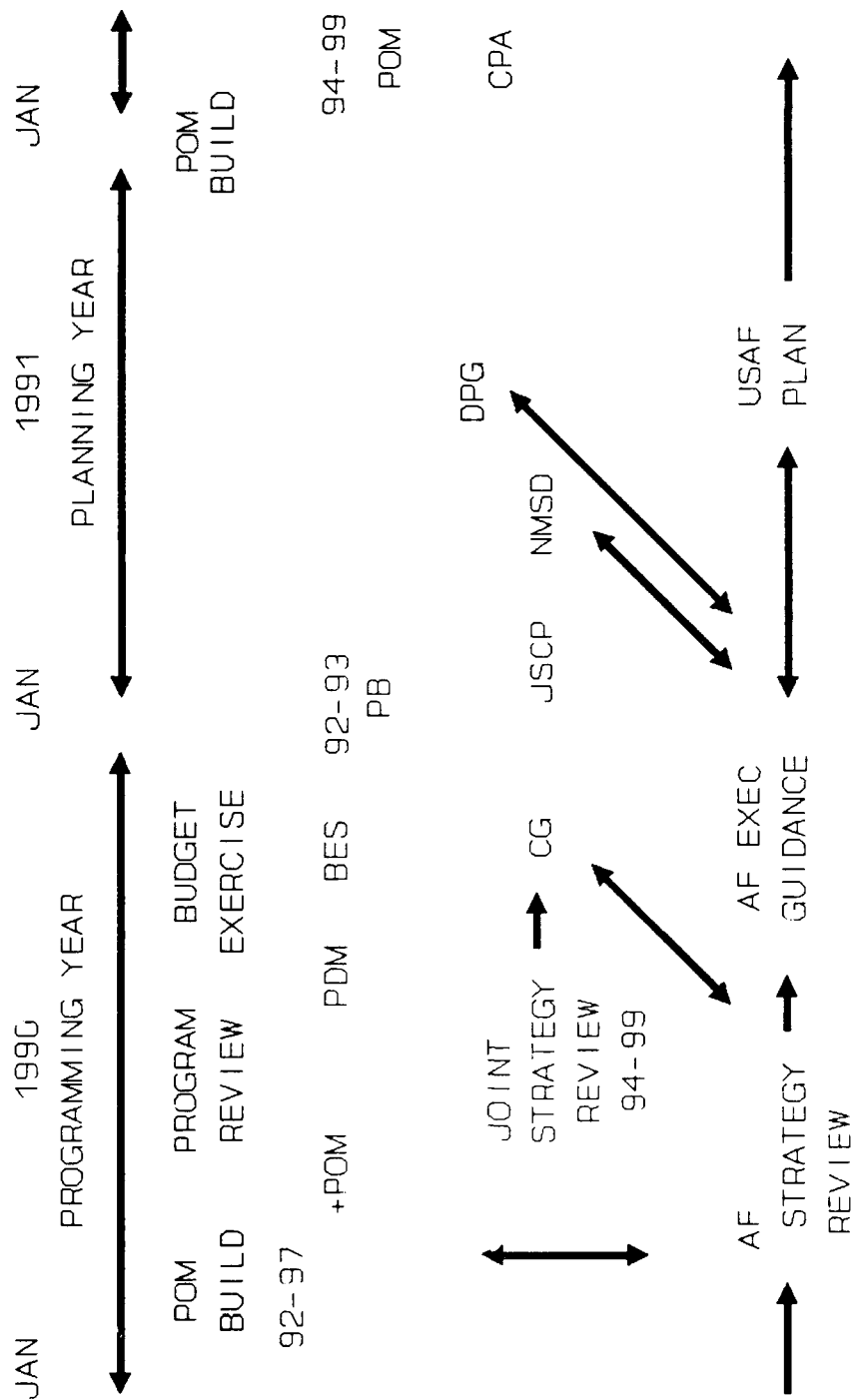


Figure 14: Air Force Planning Timeline (22)

This iterative strategy review will culminate in a loose leaf document called the Air Force Executive Guidance, which details the baseline policy and strategy for Air Force planning. This document will contain a collection of position papers defining Air Force policy on key issues, and will be used to prepare Air Force inputs into the DoD planning process and to build the Air Force plan. The status of this document will be presented to the field in an annual MAJCOM planning conference. This document will also prepare the CSAF for sessions on the JSR, the CG, and the NMSD. In addition, the executive guidance will prepare the Secretary of the Air Force for Defense Planning and Resource Board (DPRB) deliberations of the DPG. At the conclusion of all of these sessions and deliberations, the USAF plan will be published (22).

The Air Force plan will establish planning priorities and convey senior leadership vision. The plan without annexes will be signed out by the CSAF/SECAF and distributed throughout the Air Force. The plan with annexes will be staffed and coordinated through the Force Structure Committee (FSC) and the Air Force Board Structure (AFBS), and will be used internally by HQ USAF for POM development. An overview of the plan contents is provided in Table 4.

Evaluation. As with the Vanguard model, this proposed model will be evaluated against the set of planning factors developed from the literature review and the planning

process models, and summarized in Table 2. The proposed model was designed to more fully align with the JSPS, and to provide more timely and accurate Air Force inputs to the overall DoD/CJCS planning process.

Table 4. The USAF Plan Overview

Executive Summary

Strategy and Planning Guidance

- National Goals
- National Security Objectives
- National Security Strategy
- National Military Strategy Document

USAF Strategy-to-Task

- USAF Strategy
- USAF Objectives
- USAF Tasks
- Capabilities

USAF Planning Priorities

- Budget/Program Tradeoffs
- Geopolitical
- Air Force Roles and Missions

Global Assessment

- International Trends
- Regional and Global Implications
- Technological Considerations

Force Planning Guidance

- Fiscally Constrained Force Levels
- Net Assessment

Scenarios/Required Force

Annexes

In this model the senior leadership is the SECAF and the CSAF. This model has the full support and active participation of the top leadership, which satisfies the first planning factor. One of the specific objectives of the model is to prepare the SECAF/CSAF for DPRB deliberations and congressional testimony (22). The senior leadership is directly involved in the issues process and, in fact, use the position papers generated from the issues to make an impact in the JSR. This satisfies planning factor 2. This model also provides for top management to issue the top-down guidance, which meets the fourth planning factor.

The Air Force executive guidance is a collection of position papers worked up to the Chief to establish his guidance on the issues ... The process provides a formalized method for senior leadership to pass down their policy and strategy guidance to lower echelons... (22)

This model does allow for feedback between the Air Force strategy review and the JSR, and instantaneous updates to the position papers that are used in the JSR and later to form the executive guidance. The process for doing this, however, is an informal one. Therefore, this only partially meets planning factor 3. This process does not actually establish the organizational goals, objectives, and missions, but it is directly involved and makes a major impact in the JSR which, ultimately, publishes the CG, the JSCP, the NMSD, and the DPG. Therefore, these documents

reflect the Air Force position on national strategy, national military strategy, and long-range capabilities. The Air Force planners can then help the CJCS fulfill statutory requirements, prepare strategic plans, and develop military options (22). These options establish USAF planning priorities (alternatives, strategies, and environments), which can then be provided to the programmers as a baseline for their development of the Air Force POM (22). These actions partially meet planning factor 5, and fully meet factor 6.

Planning factors 7 and 8 state that the process must be iterative, on-going, and flexible. "It is critical to emphasize that this is an iterative, on-going process so that we can achieve continual, timely update of positions" (22). This model is flexible in that it is proactive instead of reactive and will develop pre-identification issues, send out field grams and tasking messages, and hold/brief at various conferences (22). The ninth planning factor states that all the players must be involved. This model will broaden the focus of planning to include other agencies and MAJCOMS, and will include everybody from the CSAF to the division level planner and programmer who has to develop the POM inputs (22). Also, by tying the Air Force process to the JSPS and the BPPBS, this ensures that the appropriate outside agencies are involved and cognizant of Air Force planning activities and key issues.

Finally, planning factor 10 states that a successful planning system will increase the communication and participation in the process. This model was designed to focus attention on the need for planning and ensure that the full capabilities and attributes of air power were incorporated into OSD/JCS documents (22). As such,

The plan conveys the senior Air Force vision for the planning period. That vision must be grounded in fiscal reality; ... it formalizes the process for the staff to make inputs into planning, programming, and budgeting; and it allows formalized development of Air Force planning guidance to lead the programmers in their development of the POM. (22)

The communication and participation will also be enhanced by an annual MAJCOM planning conference that includes action officers, and a monthly MAJCOM update bulletin that will keep the field informed of the illustrative planning scenarios (IPSS), key issues, and the status of the Air Force executive guidance (22).

The evaluation of the proposed HQ USAF long-range planning model is summarized in Table 5. This shows that the HQ USAF model meets eight of the planning factors completely, and partially meets two of them. In no instances did the planning model fail to meet a planning factor. Based on the evaluation of this model with the rival proposition (the Vanguard planning model) and the set of planning factors, the HQ USAF long-range planning model can be considered a successful planning system in theory.

Only after full implementation can this model be fully evaluated.

Table 5. Summary of the HQ USAF Planning Model

Planning Factor	Model Meet the Planning Factor?		
	Yes	Partially	No
1	X		
2	X		
3		X	
4	X		
5		X	
6	X		
7	X		
8	X		
9	X		
10	X		

During the course of the data collection, it was discovered that Headquarters Air Force Systems Command (HQ AFSC) had also developed a long-range planning process. This process was not as mature as the HQ USAF/XOX process, and therefore, could not be evaluated. The main reason for this was that the support documentation, i.e. talking papers, briefings, implementation plans, etc., had not yet been developed. However, the author did obtain a series of preliminary flow charts and process diagrams, which are depicted as Figure 15 (presented in Appendix C).

V. Summary, Conclusions, and Recommendations

Summary

This study developed a set of planning factors that constitutes a successful long-range planning system, and then evaluated the proposed top-level Air Force long-range planning model against on these factors to determine the feasibility for implementation.

This research suggests that long-range planning is indeed necessary for organizational success. In all types of organizations, long-range planning enhances the decision-making process, promotes more efficient resource allocation, enables the planner to explore alternatives and develop strategies, and provides the flexibility to change with the environment.

The study also developed a set of planning factors based on an extensive, in-depth literature search and a review of selected planning process models. The planning factors were:

- 1) full support of top-level management;
- 2) top-level management must be actively involved in some aspect of the planning process;
- 3) there needs to be a feedback mechanism to measure planning performance;
- 4) top-level management must issue top down guidance;
- 5) the process identifies organizational goals, objectives, and missions;
- 6) it develops alternatives and strategies, and projects environments;

- 7) the process must be iterative and on-going; and
- 8) the process must be flexible; and
- 9) all the players must be involved; and
- 10) the process increases communication and participation.

The Vanguard planning process was evaluated based on these planning factors to determine the usefulness of an already established planning system. The results showed that the Vanguard planning model only met two of the planning factors, partially met three of them, and did not meet five of the planning factors at all. The proposed HQ USAF long-range planning model was then evaluated based on the same set of planning factors. The results showed that the HQ USAF planning model met eight of the planning factors, and partially met the remaining two. There were no instances where this model failed to meet a planning factor at all.

Conclusions

It is obvious from this research that long-range planning is needed, yet is not done very well, if at all, in many segments of industry and the government. The USAF has established a long-range planning framework, but it has not been institutionalized at the lower levels, i.e. MAJCOMs, product divisions, laboratories, test centers, etc. Long-

range planning is especially important in the USAF since these planning decisions may have world-wide implications. One military planning theorist wrote, "... planners must attempt to think like the enemy or, more precisely, like that segment of the enemy elite having the ability to terminate the war or decide not to start it in the first place" (26:26).

The following show how the results of this research have answered the initial research questions. The first research question sought to determine if long-range planning is essential for organizational success. Numerous studies were cited that link a formal long-range planning process with improved performance and overall success. This correlation means better decision-making capability, more efficient resource allocation, and improved flexibility to change, among other performance enhancing areas.

The second research question sought to develop a set of planning factors that constitutes a successful planning system. There definitely emerged a set of planning factors that could be associated with a successful long-range planning system. Clearly, the planning process must have the support and active involvement of top-level management to be effective. It must also have specific top down guidance, as well as, a feedback mechanism to ensure performance evaluation. The planning process must be a

flexible, on-going process that is monitored, analyzed, discussed, and modified on a regular basis (3:50).

The third research question sought to determine what top-level Air Force long-range planning model was currently in use. It was discovered that a proposed long-range planning system was in the early stages of implementation. This system was simply called the USAF planning system. It was further discovered during data collection that HQ AFSC also had developed a proposed long-range planning system. This system could not be evaluated, however, due to it being in the very early stages of development and the lack of supporting documentation, i.e. briefings, talking papers, implementation plans, etc. The author did obtain an initial set of flowcharts and diagrams, which are presented in Appendix C.

The fourth research question sought to evaluate the top-level Air Force long-range planning model based on the set of planning factors developed in question two. The results of this evaluation showed that the proposed top-level planning model met eight of the planning factors and partially met the remaining two. Based on the evaluation, it was deemed that this model will be successful, in most likelihood, when fully implemented.

The fifth research question sought to apply current methodologies to improve any deficiencies in the proposed planning model. Far and away, the most important

methodology to improve the proposed planning model, or any planning model for that matter, is a formal training program. Nowhere does this model address training requirements, issues, or education. Training issues need to be addressed during the initial development of the planning process. It would be very difficult to implement and conduct a long-range planning program without the guidance and direction of trained managers, or subordinates specifically trained in long-range planning methods and techniques.

The view is almost unanimous that long-range planning can easily become a part of the decision-making process of any organization - whether it be in the government, industry, private sector, or nonprofit arena (32:xv). In the absence of long-range planning, managers are forever in a fire-fighting mode where, "... they are constantly managing uncertainty rather than planning on certainty" (29:8). The following quote from Creating Strategic Vision, is by Jerrold P. Allen, and embodies the spirit of long-range planning.

Think in anticipation, today for tomorrow, and indeed, for many days. The greatest providence is to have forethought for what comes. What is provided for does not happen by chance, nor is the man who is prepared ever beset by emergencies. One must not, therefore, postpone consideration till the need arises. Consideration should go beforehand. (32:43)

Recommendations

It is recommended that the proposed HQ USAF long-range planning model be implemented with the following caveats:

- 1) Establish a formal feedback mechanism to track and measure planning performance.
- 2) Develop a closer link to the organizations and documents that determine national goals, and national military strategy and objectives. This is to facilitate a stronger USAF position in these high level planning documents.
- 3) Implement a formal training program to teach both managers and working level personnel the correct methods and techniques for accomplishing long-range planning. This can be done either by long-range planning consultants, or by in-house program trainers.
- 4) Document the process in a regulation or operating instruction. This will help institutionalize the process, and make it easier to track changes or updates as the process matures. It will also provide future planning administrations continuity of operations with a minimum of disruptions.

This research study has only scratched the surface of long-range planning. There is much more research that can be done in this area. Areas for further research include:

- 1) Evaluate this planning model again after full implementation to measure its effectiveness.

2) Evaluate the HQ AFSC long-range planning model after it is fully developed and implemented. Determine whether the model is compatible with the higher level HQ USAF planning model.

3) Determine if the HQ USAF planning model was institutionalized by studying whether lower level planning processes have been developed at the MAJCOMs, product divisions, laboratories, and test centers.

4) Develop effectiveness criteria and evaluate the usefulness of long-range planning in the military.

5) Develop an in-house long-range training program for the specific needs of the military. Include a training program for both managers and the working level planners.

6) Develop specific military related tools, methods, and techniques for accomplishing long-range planning.

7) Conduct a survey to determine the opinions of the military planner and non-planner alike, with regard to long-range planning.

8) Conduct an industry survey of long-range planners to determine their opinions on planning in the military, and to obtain their ideas and suggestions for improvement.

Appendix A: Acronyms

AF - Air Force

AFAE - Air Force Acquisition Executive

AFBS - Air Force Board Structure

AFCMD - Air Force Contract Management Division

AFR - Air Force Regulation

AFSC - Air Force Systems Command

ASAF/A - Assistant Secretary of the Air Force/Acquisition

ASD - Aeronautical Systems Division

ASP - Acquisition Strategy Panel

ATD - Advanced Technology Development

BES - Budget Estimate Submission

BPPBS - Biennial Planning, Programming, and Budgeting System

CEO - Chief Executive Officer

CG - Chairman's Guidance

CIA - Central Intelligence Agency

CINC - Commander in Chief

CJCS - Chairman of the Joint Chiefs of Staff

CPA - Chairman's Program Assessment

CSAF - Chief of Staff of the Air Force

C4 - Command, Control, Communications, and Computers

DIA - Defense Intelligence Agency

DMR - Defense Management Review

DOD - Department of Defense

DODD - Department of Defense Directive

DODI - Department of Defense Instruction
DPG - Defense Planning Guidance
DPRB - Defense Planning and Resource Board
DTIC - Defense Technical Information Center
FEMA - Federal Emergency Management Agency
FSC - Force Structure Committee
FSD - Full-Scale Development
FYDP - Five Year Defense Program
GA - Global Assessment
HQ AFSC - Headquarters Air Force Systems Command
HQ AFSC/XR - Deputy Chief of Staff for Plans and Programs,
Air Force Systems Command
HQ USAF - Headquarters United States Air Force
HQ USAF/XOX - Directorate for Plans, United States Air Force
IPS - Illustrative Planning Scenarios
JCS - Joint Chiefs of Staff
JSCP - Joint Strategic Capabilities Plan
JSPD - Joint Strategic Planning Document
JSPS - Joint Strategic Planning System
JSR - Joint Strategy Review
MAA - Mission Area Analysis
MAJCOM - Major Command
MAP - Mission Area Plan
MN3 - Mission Need Statement
MOP - Memorandum of Policy
NASA - National Aeronautics and Space Administration
NATO - North Atlantic Treaty Organization
NMSD - National Military Strategy Document

NSC - National Security Council
OMB - Office of Management and Budget
OSD - Office of the Secretary of Defense
PB - President's Budget
PBD - Program Budget Decision
PDM - Program Decision Memorandum
PEG - Program Evaluation Group
PEO - Program Executive Officer
PGM - Planning Guidance Memorandum
PIPD - Planning Input for Program Development
PMD - Program Management Directive
POM - Program Objective Memorandum
PPBS - Planning, Programming, and Budgeting System
R&D - Research and Development
RDT&E - Research Development Test and Evaluation
SECAF - Secretary of the Air Force
SECDEF - Secretary of Defense
SON - Statement of Operational Need
SPA - Strategy and Policy Assessment
SPO - System Program Office
S&T - Science and Technology
SYDP - Six Year Defense Program
TAP - Technology Area Plan
TOA - Total Obligation Authority
USAF - United States Air Force
VPS - Vanguard Planning Summary

Appendix B: Definitions

Concept Direction Studies - studies done between milestones 0 and 1 to evaluate potential alternative approaches to meeting validated, priority needs (15).

Development Planning - a long-term planning process that develops and acquires militarily superior and supported weapon systems to be used in the AFSC POM process and development (18).

Long-Range Planning - a systematic framework to evaluate all major organizational decisions and assist the decision-making process under varying conditions of uncertainty for a long-term planning horizon.

Mission Area Analysis (MAA) - user conducted analysis accomplished to understand capabilities and deficiencies (problem oriented) assessed against mission objectives and existing assets (15).

Mission Area Plan (MAP) - a plan that identifies future system concepts and capability needs by focusing technological opportunities.

Requirements Planning - a process of making trades in performance, cost, and schedule to determine the optimum system specification to meet the operational need (15).

Technology Area Plan (TAP) - a plan that identifies and defines high-priority technologies and investment plans for the Air Force S&T program.

Appendix C: The Proposed HQ AFSC Long-Range Planning System

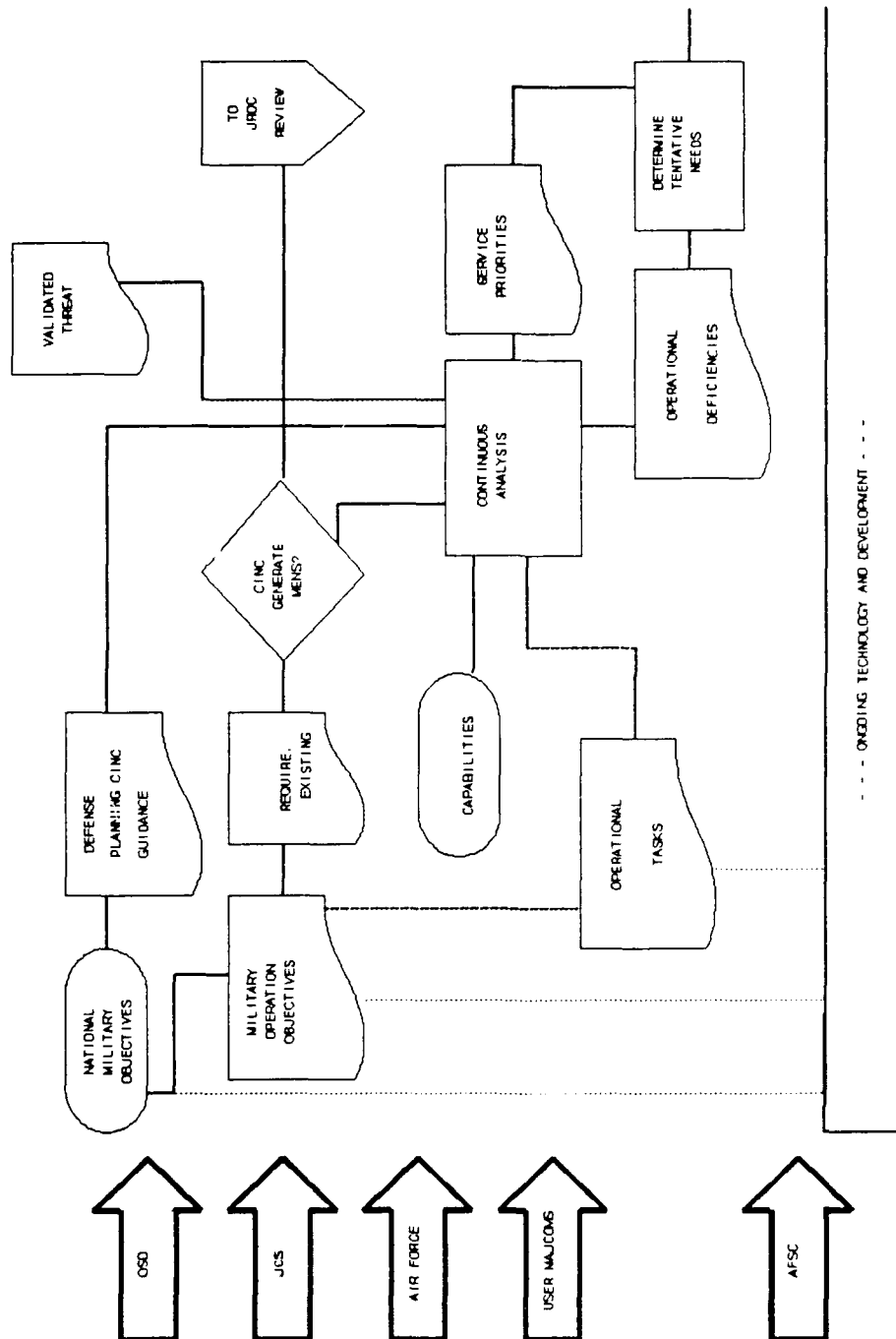


Figure 15: The Proposed HQ AFSC Long-Range Planning System

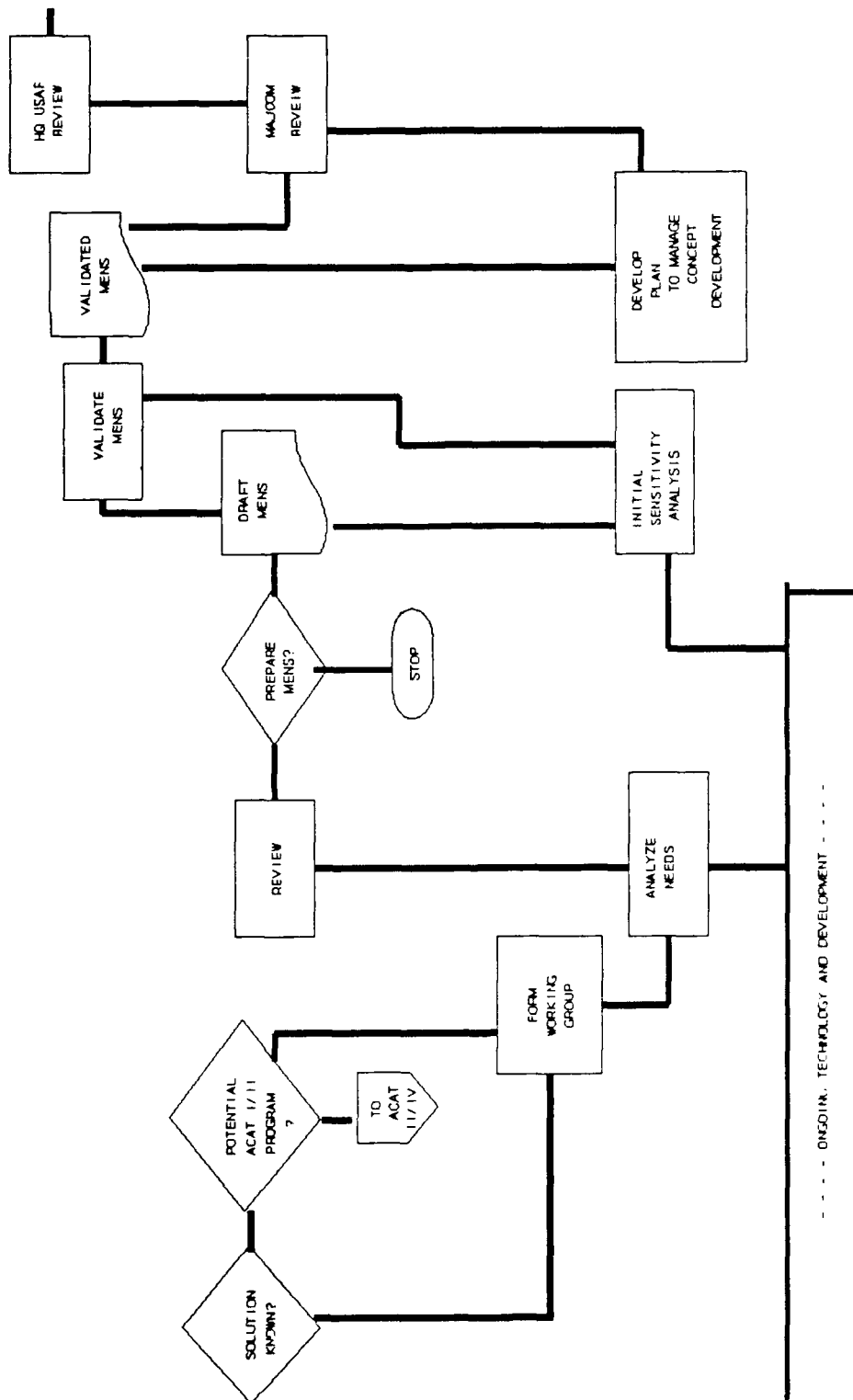


Figure 15 Continued

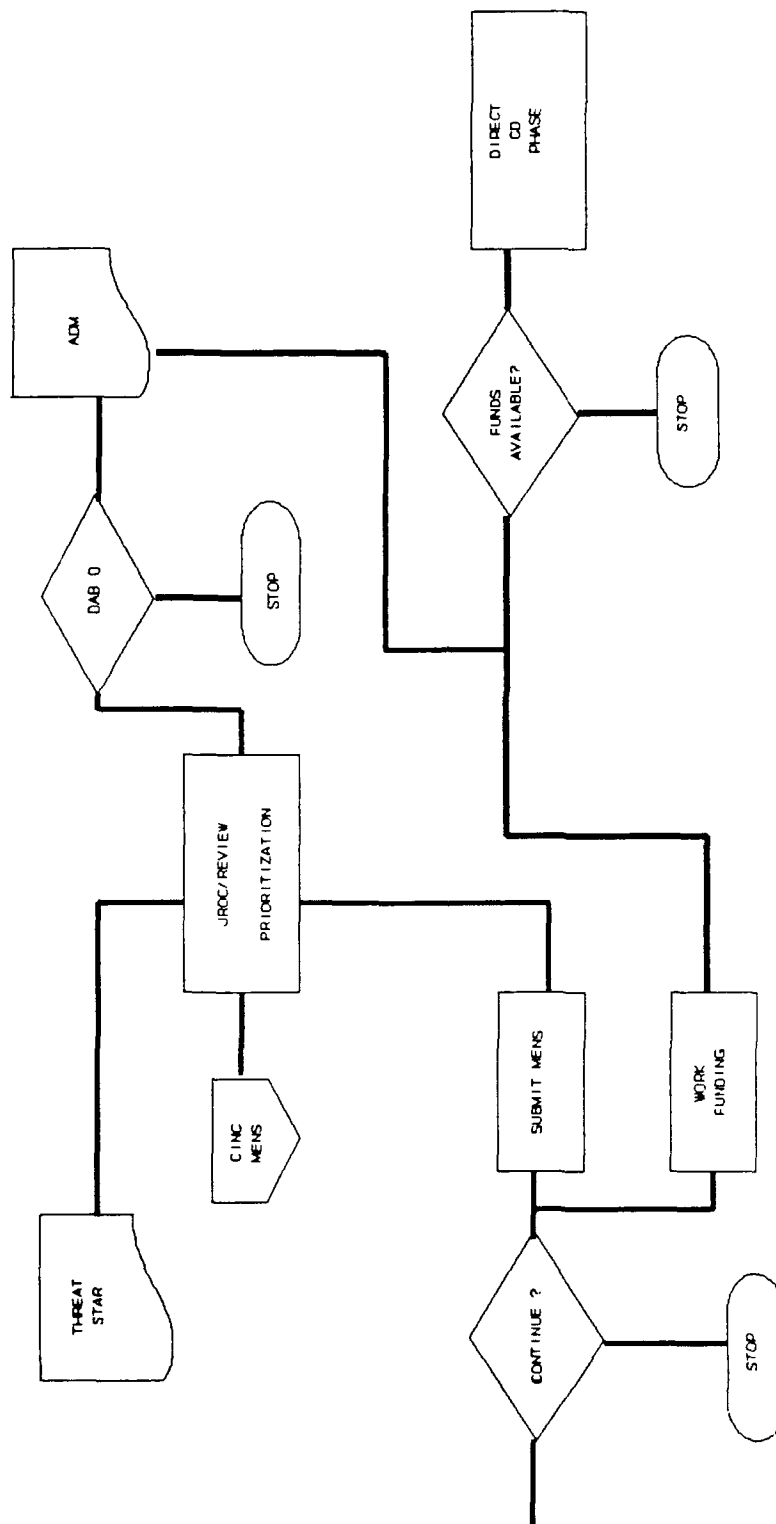


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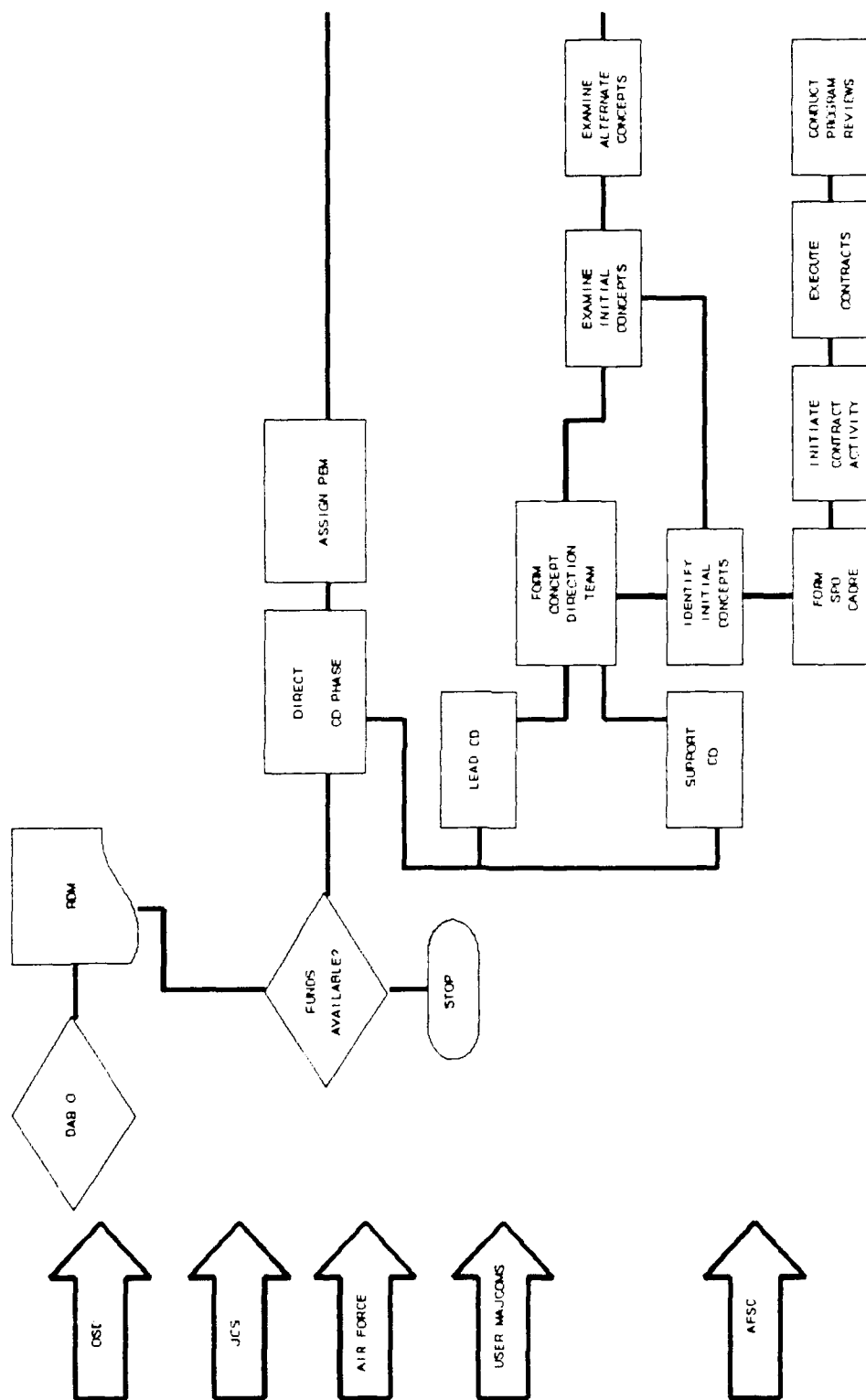


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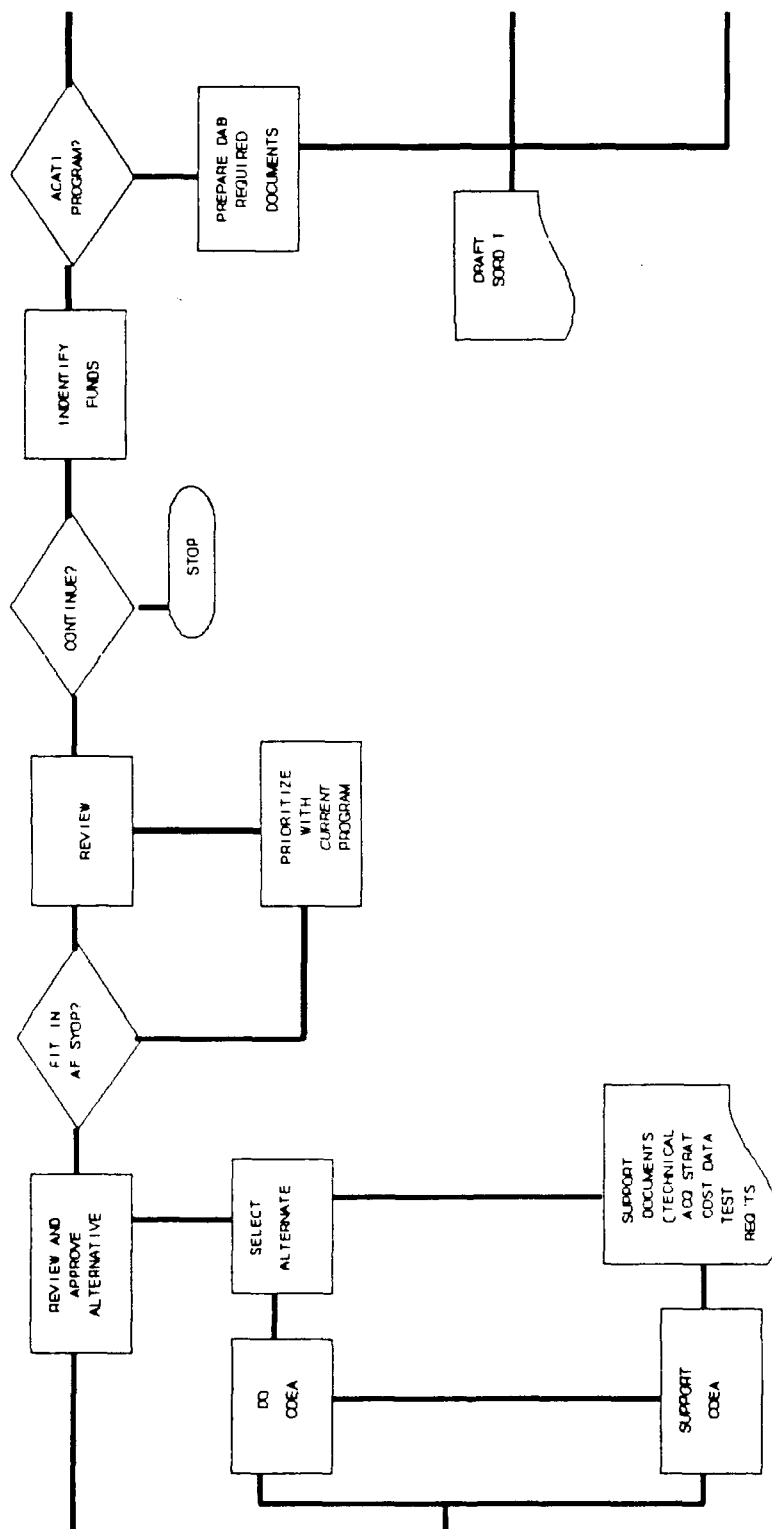


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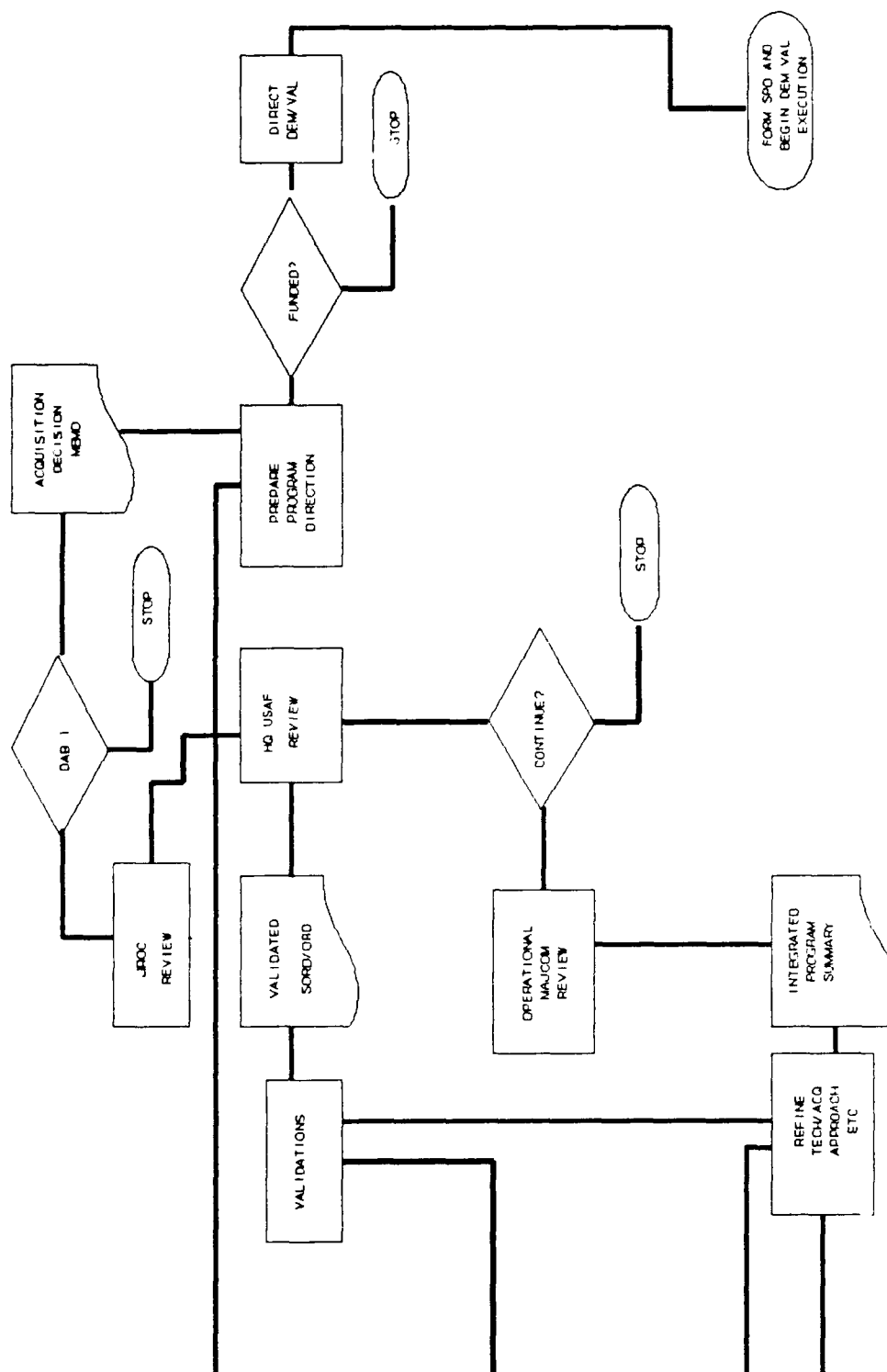


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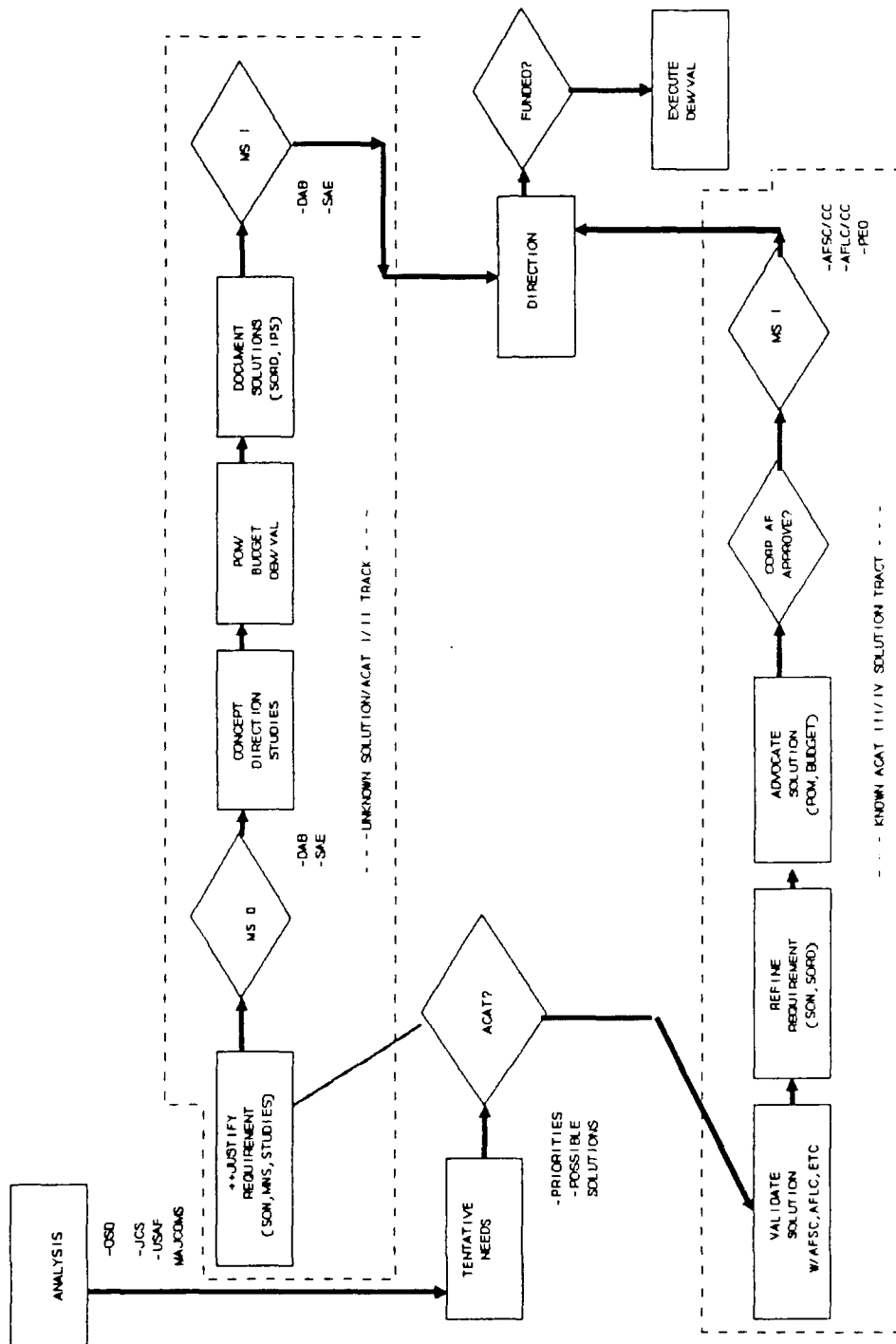


Figure 15 Continued

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13. ABSTRACT (Maximum 200 words) The purpose of this study was to develop a set of planning factors that constitutes a successful long-range planning system. The proposed top-level Air Force planning model was then evaluated based on these planning factors to determine the feasibility for implementation. Through an extensive, in-depth literature search and a review of specific planning process models, this study developed a set of planning factors. They were: full support and active participation of top-level management in the process; management issues top down guidance; a feedback mechanism exists; the process identifies goals and objectives; it develops alternatives and strategies; it must be iterative, on-going, and flexible; all the players must be involved; and the process will increase communication and participation. The evaluation of the proposed model found that it met eight of the planning factors and partially met two of them. The model was deemed successful in theory and feasible for implementation, with the following caveats: establish a formal feedback mechanism, develop a closer link with the goal setting organizations and documents, formalize a training program, and document the process in an operating instruction. <			
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